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MAGAZINE

>Media>Management>Production>Distribution

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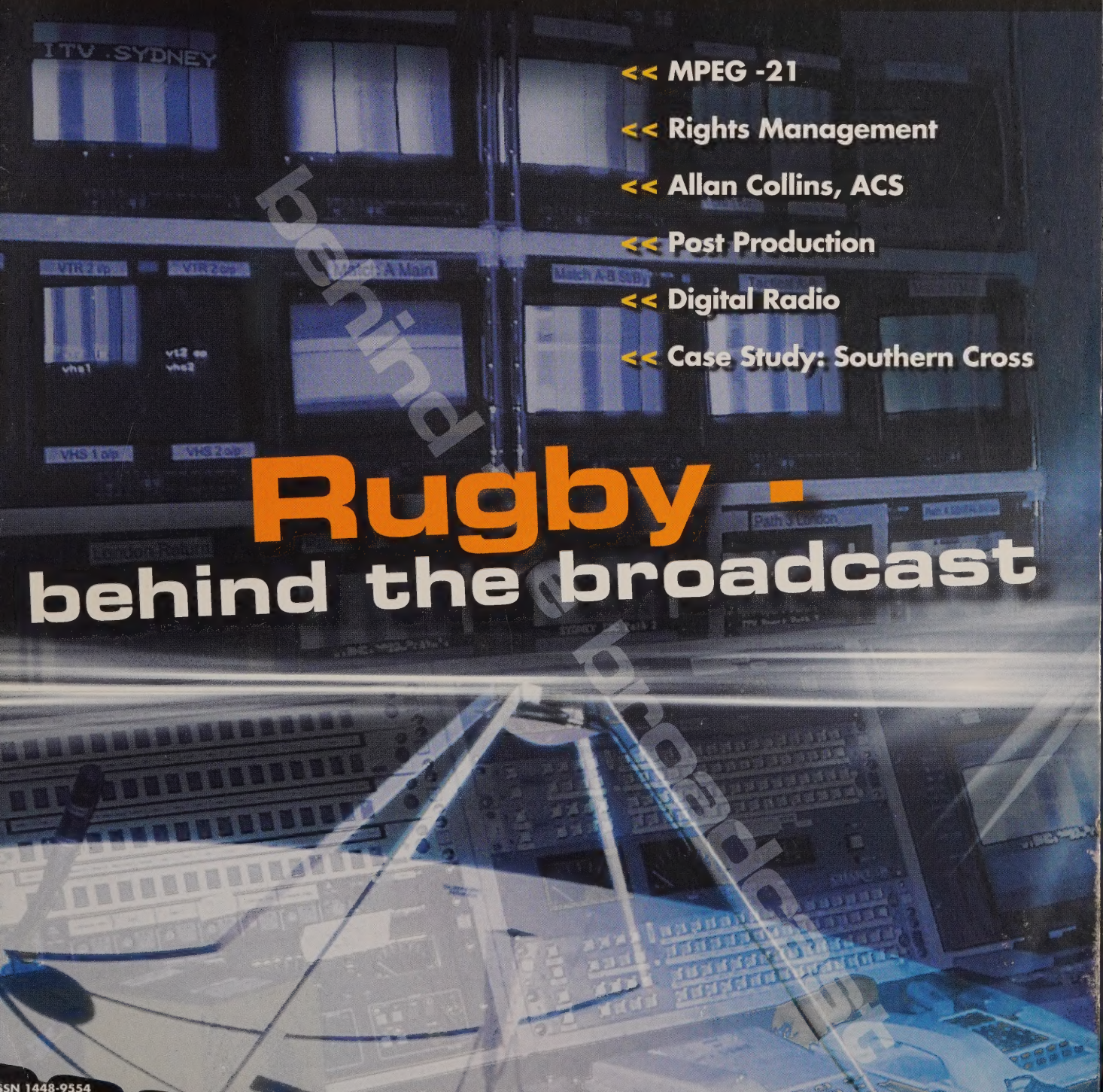

<< MPEG -21

<< Rights Management

<< Allan Collins, ACS

<< Post Production

<< Digital Radio

<< Case Study: Southern Cross

Rugby - behind the broadcast

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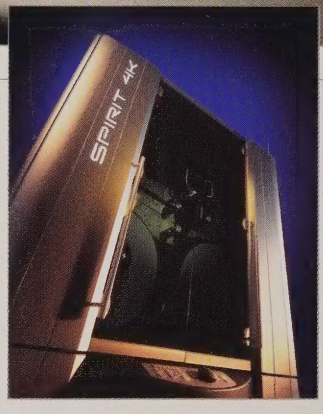

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Editorial

WELCOME

TO THE very first issue of CONTENT+TECHNOLOGY, the magazine that aims to interpret the technology, management and production issues confronting content producers and distributors throughout Australia, New Zealand, Southeast Asia and beyond.

We now live in an era where Korean companies produce American animation, Australian facilities post Chinese TV commercials and the international visual FX industry takes its lead from Wellington. Even Bollywood is looking offshore to out-source expertise. It is clear the Asia-Pacific has become a key player in the global content creation industry.

Just as clear are the changes that have taken place in the distribution sector. Improvements in technology, fluctuating advertising revenues and the rise of interactive avenues for consumer leisure time have all contributed to a demographic shift throughout the industry, especially in the areas of free-to-air TV and radio.

Whether through retirement or centralisation, 2003 has been a year of upheaval for the technical/engineering fraternity. More and more, technology decisions are being made by operators and production staff - those who have to live with such choices - and, if their presence at exhibitions like NAB, IBC and SMPTE is any indication, such decisions are seeing increasing input from financial controllers.

Gone are the days of "Whaddya reckon, Robbo?" followed by "Here's the cheque". CFOs are now having to educate themselves in previously arcane areas of creation and distribution technology while they ask the question, "What's my return on investment?"

And, so, we come to the reason behind CONTENT+TECHNOLOGY, to help ensure that the technical, production and management fraternities throughout the industry are reading from the same page - so to speak.

So, what will you see in CONTENT+TECHNOLOGY? From Acquisition to Distribution, we will be looking at the industry as a whole.

Each issue will include: Industry News from the region and beyond - and its impact; Emerging standards, technology, and companies; Case studies featuring technology implementation by local media operators - warts and all; Product Announcements; Profiles of people and events.

We'll also be presenting whitepapers with a twist - featuring assessments from relevant industry users.

To this end, we are inviting qualified readers to become part of our Editorial Board, to get your views across, and to have input on issues affecting your company and the wider industry. To become part of the board, call us on +61-(0)2-9332 2221 or email papers@broadcastpapers.com

We urge you to participate. As former Australian Communications Minister Richard Alston could tell you, there's nothing as deafening as a silent phone or as huge as an empty email box.

While CONTENT+TECHNOLOGY aims to examine industry issues in depth, we recommend the more news-hungry among you make a habit of visiting www.smpte.org.au, managed by us on behalf of the Australia Section of the Society of Motion Picture & Television Engineers. Here you'll find breaking news, classified and job ads and more. Sign up for regular emails or, better yet, become a SMPTE member.

Also be sure to check out our parent web site, www.broadcastpapers.com, the most comprehensive industry online whitepaper library available with over 50,000 worldwide users per month. Broadcastpapers takes a global view of all aspects of the traditional and emerging facets of the industry with contributions from equipment and software vendors, consultants and partner conferences such as IBC, CASBAA, Broaadcast Asia, NewsWorld and SMPTE.

Lastly, we'd like to thank our advertisers for their support in making this launch issue of CONTENT+TECHNOLOGY possible and you, the reader, for taking the time to read it.

Regards
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ACMI on Board with Kayak

The Australian Centre for the Moving Image (ACMI) has purchased a Grass Valley KayakDD 1 M/E Digital Production Switcher for its Digital Studio facility housed inside the Federation Square community complex in Melbourne's CBD.

The Victorian cultural body will bring together leading edge digital technology to provide visitors access to the creation and viewing of the moving image.

The KayakDD was shown for the first time in Australia at the SMPTE Exhibition last July. It is designed for live production, small corporate studios, and editing applications in a compact design.

Miller is Collecting History

Australian Manufacturer Miller Camera Support turns 50 next year.

To celebrate, the Miller marketing team are compiling a record of the film and video industry over the last 50 years, particularly as it relates to camera operators and their use of Miller tripods.

If you have any interesting stories and photos you would like to share please contact Heidi Tobin at Miller on (02) 9439 6377 or via email on heidi.tobin@miller.com.au

New JVC Website

The JVC Professional online presence has undergone a facelift with the launch of a new website. According to Noel Oakes, National Sales Manager, JVC Professional Products Division, the new website features updated product information, local and global news, brochure pdf's and links to other sites. It will soon feature a special dealer section where authorised resellers can download the latest price lists, instruction and technical manuals for JVC products. The website can be found at www.jvcpro-australia.com

NBN to Build Australia's First HD OB

NBN Television has placed orders for the building of what will be Australia's first High Definition (HD) Outside Broadcast unit.

The new HD unit will enable NBN to produce multi-camera High Definition or Standard Definition coverage of outdoor events, primarily for third party producers. The unit will also have the capability of "plugging in" to NBN's 260m2 Studio complex to produce HD program content for use by external producers.

The philosophy in designing the unit, was to be able to provide a facility that could cater for a small Standard Definition (SD) event through to a larger HD production. To accomplish this NBN has taken the view that all signals should remain as HD at all times and the production environment should be "tapeless". This simplified the overall design and operation of the truck.

To achieve this NBN has purchased key components from Thomson Grass Valley, EVS and Sony.

Thomson Grass Valley has supplied an HD Kalypso production centre, HD LDK 6000 series cameras and HD "glue" products. The HD switcher is two mix effects (M/E) rows that split into 4 M/E rows, HD Transform Engine with three channels of DVE, two chroma keyers, Flexikey and the HD Klipcache still store. The HD cameras are LDK 6000 series cameras that can operate on both triax and optical fibre cables.

EVS provided the "tapeless" component of the production environment. A 4-channel HD LSM server is networked with SportNet to a 2-channel HD maXS server, giving a total of 6 channels. This combination allows instant HD replays, playlist management for HD highlights packages with wipes and dissolves as well as split screen to show two perfectly synchronised replays side by side on the same screen. An Xfile Digital Archive Station is also available to allow clients to have instant access to all content after the event is completed.

The facility is also equipped with Sony HD Digital Betacam and Digital Betacam VTR's, Yamaha DM2000 audio mixer and a ClearCom talkback system.

BDL Downunder

BDL Autoscript has announced several orders from major Broadcasters in New Zealand and Australia worth in excess of AUD$400,000.

In New Zealand, TV3 has ordered four systems split between studio and location operations interfaced to ENPS. Additionally, Maori TV, the new specialist station, has committed to a base station, and five TFT on-camera prompters and systems have also been installed at internet company, in NZoom.

In Australia, Channel 7 who already use BDL prompters interfaced to iNews in Melbourne, has rolled out BDL base stations and on-camera prompters to production centres in Adelaide, Perth and Sydney. BDL equipment has also been selected for the new Prime TV installation interfaced to Dalet/Open Media and a further iNews Installation at SBS.

AAV to Acquire Staging Connections

AAV Limited has entered into an agreement to acquire all the shares in Staging Connections Pty Limited, the Australian provider of audio visual and staging services for the conference and exhibition markets.

Staging Connections provides the equipment, creativity, technical know-how and service for corporate presentations, product launches, promotions, conferences, television broadcasts and award ceremonies.

AAV has been looking for high quality new opportunities in its sector and after completing a comprehensive due diligence, AAV believes that Staging Connections meets that objective.

The acquisition of Staging Connections is expected to provide AAV with a substantial lift in earnings per share for the year ended 31 December 2004.

As part of the proposal, Bob Mansfield, the Chairman of Staging Connections, has agreed to join the Board of AAV as non-Executive Chairman, subject to shareholder approval. Gary Hackett will continue as Staging Connections' managing director.

The acquisition of Staging Connections follows a period of organic growth for the AAV digital media services group. In July 2003, AAV and Regency Recordings formed the AAV Regency joint venture which has created one of Australia's largest electronic media manufacturing businesses encompassing DVD, VHS, CD, audio cassettes and distribution logistics.

It is anticipated that both businesses will benefit from inter-facilities use.

FIBRE Partners with UK's Sohonet

International network connectivity - and more of it.

That's what Australian content producers looking to work with Hollywood, London and New Zealand are set for with the announcement of a Strategic Partnership agreement between Sohonet and FIBRE (Film Industry Broadband Resources Enterprise).

The agreement with Sohonet provides for fully managed connectivity for FIBRE customers all around Australia, with service to all Sohonet international destinations.

In addition FIBRE is to become an Australian Carriage Service Provider.

"It's long overdue for Australian companies to be able to get reliable, secure and affordable connectivity with producers overseas," said Dominic Case, Chair of FIBRE.

AUSTRALIAN POTENTIAL

According to Dave Scammell, MD of Sohonet, "We have long been aware of the under utilised potential in the Australian content creation sector that American and European film, television and advertising creative producers has seen, but felt was difficult to access. With increasing demands on cost and time constraints, our clients have recognised that across Sohonet time disadvantage can be turned into a time advantage."

According to Judi Tucker, Executive Director of FIBRE, "This extremely important partnership will provide a secure conduit to enable our industry to bid for new projects from around the world, knowing that work can continue here in Australia whilst the production companies sleep in USA and UK."

Inaugural customers of the new FIBRE/ Sohonet service include Animal Logic, Cutting Edge, the Australian Caption Centre and Rastis Central.

→ McArdell to Future

Matthew McArdell has joined Future Reality in the role of Sales and Technological Support. McArdell has previously worked as a demonstration artist for animation software and has held a range of positions across several software development projects. At Future Reality, McArdell will provide technical assistance across all Future Reality products, along with consultation and advice for customers looking for products and system configurations.

"Future Reality is now set to grow quickly after a period of reorganisation," said McArdell. "The company will be adding new products and I am looking forward to applying my skills to new areas."

By Karl Jansson*

HR Issues in a Changing World

AS AN HR Consultancy dedicated to Broadcast and Television in Australia, our market intelligence is constantly being challenged and updated by information supplied by clients and candidates. The data we receive with regard to positions available, staff and related issues is subsequently cross referenced, collated and summarised. We then reflect upon general recruitment trends in the market to draw a conclusion. So what are the main issues facing our industry in today's market?

Firstly we need to be conscious of the rights of individuals and legislation introduced around the world protecting applicants and their personal information.

We only need to look at current statistics to understand the concern.

In Australia The Office of the Federal Privacy Commissioner released statistics to June 2003 that reflect an increase in complaints related to privacy issues.
See Table 1

We understand that similar increases, although not by number, reflect a global trend. It is also interesting to note the rise in the number of complaints since the introduction of the Private Sector Amendments introduced in Australia on December 2001.

By maintaining good housekeeping practices you will eliminate any potential problems that may rise from the mishandling of an applicant's information. Consider the methods your company uses to attract or source candidates. Review the way in which their details are handled and stored and be conscious of the questions posed to candidates. Are they relevant or invasive?

These are some of the real issues that need to be addressed in line with government guidelines indigenous to your region. Your company will need to possess a standard practice so that all employees are aware of their responsibility and potential consequences to the company.

By further dissecting the above statistics the following represents a number of complaints as a percentage. They relate to data collected from December 2001 in regards to handling applicant information.

As can be seen from Table 2 the data received can be inappropriately used as database material (Direct marketing, spam 11%).

Although it may be tempting to address the database of applicants with this month's specials, or enlist them onto your monthly newsletter, it could also be damaging to the company's reputation, particularly when the broadcast community is so well connected.

So, too, is it inappropriate to forward a candidates personal details to a third party without the expressed prior permission from them to do so. (Use and disclosure 33%)

If you choose to discard all candidate information from your files to protect your organisation after the position has been filled, then appropriate measures need to be taken to ensure the privacy of individuals remains intact.

In terms of other noticeable trends, the ratio of International permanent to temporary staff has increased significantly.

Australia stands as having one of the fastest growing proportions of part-time work of any OECD country over the 1986-96 period (Table 3). Only the Netherlands had a more dramatic rate of growth in part-time employment over the same period. Interestingly, in supposedly more 'deregulated' labour markets such as New Zealand, USA and UK, part-time employment grew more slowly. Any related issues that may arise from employing temporary staff are influenced by two fundamental needs, productivity and flexibility. In a demanding world that's pressurised with 'need now' appointments, the danger in shifting the company's culture from permanency should

CONTINUED ON PAGE 8

<< << TABLE 1

Number of privacy related complaints in Australia

	2000-2001	2002-2003
Complaints received	194	1,090
Telephone enquiries	8,177	21,290
Written enquiries	884	2,384

Source: "Managing your business" Recruitment Journal (September, 2003)- RCSA

<< << TABLE 2

Ratio of complaints as an Australian percentage.

	% of complaints
Use and disclosure	33%
Collection	18%
Access and correction	18%
Direct marketing, spam	11%
Data quality	9%
Data security	9%
Other	2%

Source: "Privacy Points" Recruitment Journal (September, 2003)- RCSA

<< << TABLE 3

Growth of part-time employment as percentage of total employment, selected OECD countries, 1986-96.

		Part-time employment
Selected OECD Country	**% of total employment 1986**	**% of total employment**
1996		
Australia	18.9	25.0
France	11.7	16.0
Germany	12.9	16.5
Netherlands	29.5	36.5
New Zealand	16.8	22.4
UK	21.6	24.6
USA	**17.4**	**18.3**
OECD Total	**15.5**	**18.6**

Source: "Privacy Points" Recruitment Journal (September, 2003) - RCSA

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By Phil Sandberg

MPEG - Raising the Standards

WITH MPEG-2 considered a mature standard and MPEG-4 becoming more widespread in its deployment, technical standards body, the Motion Picture Experts Group has turned its focus to the standardisation of content management and transactions involving digital "items".

A number of delegates to the Group's recent international gathering on Queensland's Gold Coast took time out to hold a Sydney briefing session on emerging MPEG standards. Two groups of standards set to have a profound impact on content creators and owners in coming years are MPEG-7 and MPEG-21.

MPEG-7 is an ISO/IEC standard developed by MPEG and formally called the "Multimedia Content Description Interface". According to the MPEG-7 Consortium (http://www.mp7c.org), it is a "standard for describing the multimedia content data that supports some degree of interpretation of the information's meaning, which can be passed onto, or accessed by, a device or a computer code".

Based on Extensible Mark-up Language (XML), the main elements of the standard are:

* Description Tools: Descriptors (D), that define the syntax and the semantics of each feature (metadata element); and Description Schemes (DS), that specify the structure and semantics of the relationships between their components;
* A Description Definition Language (DDL) to define the syntax of the MPEG-7 Description Tools and to allow the extension of existing and creation of new Description Schemes;
* System tools, to support binary coded representation for efficient storage and transmission, transmission mechanisms (both for textual and binary formats), multiplexing of descriptions, synchronization of descriptions with content, management and protection of intellectual property.

While MPEG-1, 2 and 4 standards are about coding and delivery of content, MPEG-7 is about "Media Content Description". In the video world, with the right search engine technology, MPEG-7 coding will enable content owners to track down material based on, among other criteria, topics, author/producer, language, events, scenes, times, places and even objects within scenes. MPEG-7 information also provides the basis for online and on-demand content transactions, and that is where MPEG-21 comes in.

According to the Motion Picture Experts Group, "MPEG-21 is based on two essential concepts: the definition of a fundamental unit of distribution and transaction (the Digital Item) and the concept of Users interacting with Digital Items. The Digital Items can be considered the 'what' of the Multimedia Framework (e.g., a video collection, a music album) and the Users can be considered the 'who' of the Multimedia Framework."

Groups likely to be early embracers of the standard include libraries, archives, iTV broadcasters, publishers, and E-health. MPEG-21 will enable rights owners to sell their content directly to consumers based on a range of criteria from permanent or one-time use, individual or collections of content (song versus album), device type, and age group.

Defining D-transactions, Gerrard Drury, software engineer, enikos.

The standard will allow consumers to access content based on censor classification. Metadata can be used to classify individual scenes within a programme so that children, for example, will not be exposed to explicit material, and the standard allows for receiver devices to do this in real time. Of course, this can also lead to on-the-fly censorship of politically sensitive material. Another possible application is allowing users to pay to start viewing content on one device, stopping the programme mid-way, and viewing the remainder of the material on another device (e.g., in the car or office).

The Sydney MPEG briefing also included a demonstration of MPEG-21 creation software from Australian company, enikos (www.enikos.com). Coming out of the University of Wollongong's Telecommunications & IT Institute, enikos has developed DICreator, a WISIWYG authoring package that could have the same impact on 'Digital Item' creation and transactions that Macromedia's Dreamweaver had on web site design.

Useful web sites: MPEG home page - www.chiariglione.org/mpeg/index.htm, MPEG-7 video search engine - mp7.watson.ibm.com, Video Annotation Tool - www.alphaworks.com.ibm.com/tech/videoannex

CONTINUED FROM PAGE 6

Media Management HR Issues

always remain a conscious issue.

As the commitment to breeding company culture is strongest in motivated permanent staff, the company may consider addressing temporary staff in a similar manner.

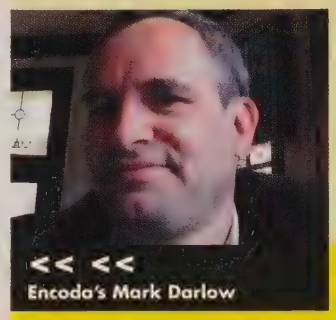
Too frequently temporary staff are not provided an induction into the company. They are engaged for the services they provide, not be employed as a spokesperson for their temporary employer. However, a trend is currently emerging is to be one of the most lucrative and rewarding initiatives in the 21st century, both financially and in terms of market positioning. When temporary staff are engaged to interact with your clients, why then would you not encourage them to attract new opportunities.

Whether it's a commission, fee or company products/services in return for their initiative, they will need to know to promote your company with a degree of knowledge. It is with this investment of time at the front end of their engagement where benefits will be seen at a later date. It's not always going to be a direct financial benefit to your company, it may be indirect good-will created by past temporary employees who have freely promoted your organisation in the market.

So, be conscious of your organisations vision statement and involve all company employees, whether temporary or permanent.

Be aware of potential hazards when dealing with individuals and understand your legal obligations when handling their information and ultimately their career.

Ensure that adequate procedures are positioned and modified to accommodate change relating to HR issues, and most of all be aware of regulatory changes as they occur. ** Karl Jansson is General Manager of J-Curve Broadcast Recruitment Consultants. Email: corporate@jcurve.tv Web site: www.jcurve.tv*



The Rights Stuff

DURING the lifecycle of a feature film a title will see cinema release, followed by video/DVD for the rental/home market. This is then followed by premium VOD, it may then be recycled on a premium pay-per-view channel who have the rights to screen the title a number of times in a month. The movie then sees terrestrial or pay TV release. With sports programming, on the other hand, its real value is in being seen live.

According to Mark Darlow, Asia-Pacific Sales & Marketing Manager for Encoda Systems, it is these factors that are driving rights management. In other words, the owner's desire to maximise revenue on their content.

"Sports rights holders break down geographic regions very carefully. They may sell live rights to Channel 9 in Australia for the cricket, but highlights might be on ESPN on Foxtel. Or, ESPN can cover that match live across all of Asia, except for Australia.

"There are contracts out there I know of where they've got pan-Asian rights with the exception of Korea and China where they're only allowed to transmit to US military bases or VIP compounds. That is effectively what's going on at the sellers end.

"At the buyer's end, it gets equally as complex. Ten years ago, Encoda broadcast operations and contract rights systems were really pretty basic. Now they're getting very complex and financial.

"The price of content has gone up exponentially, almost with the explosion of distribution ability. The sellers are able to break it up as terrestrial, satellite, different programming windows, etc."

"Also, in the past, station planners might broadcast programmes on a "gut feel", now they've got ratings to say when a particular genre movie should go on. They will then look at their stock and decide what to put out based on what programmes they can air and has an asset value still associated with it. Reports are then generated with the cost of the programme versus cost of transmission and ad revenue received."

Darlow says the technology associated with rights management is only going to get more interesting.

"While the technology and the databases have had to grow at a managerial level, what is going to get really interesting is the growth of set-top boxes. I see that technology being used to manage rights in a way that people haven't considered before.

"How do you stop something going out to particular areas? The simplest way is to have one signal go out. The set-top box can block a programme if that territory is not supposed to see it and give viewers an alternative programme.

"That's what the technology end is going to have to start doing. But, the roll-out of these solutions is going to vary by market, distributor and content type. I would see satellite probably deliver it in the next two years. It will be conditional on having a digital infrastructure in place.

"In the UK, arguably it will happen in 2008 when there's analogue switch off. Everyone's going to have to have a set-top box of some sort. It's a question of having the technology components sufficiently distributed to guard the majority of the contract."

Pay TV Piracy Report

THE FIRST independent assessment of the financial impact of pay-TV piracy in the Asia Pacific Region has been released, demonstrating the increasing seriousness of the issue for broadcasters, pay-TV system operators, regulators and investors.

The new data - covering cable and satellite TV piracy in all its forms - was issued by the Cable and Satellite Broadcasting Association of Asia (CASBAA) and CLSA Asia Pacific Markets (CLSA), and predicts US$874 million in net revenues lost in 2003.

The independent study, conducted by CLSA Asia Pacific Markets in collaboration with CASBAA and its member organizations, highlights the impact of unlicensed operators and pirate cable subscribers on regional economies including those of Hong Kong, India, Indonesia, Philippines, Taiwan and Thailand.

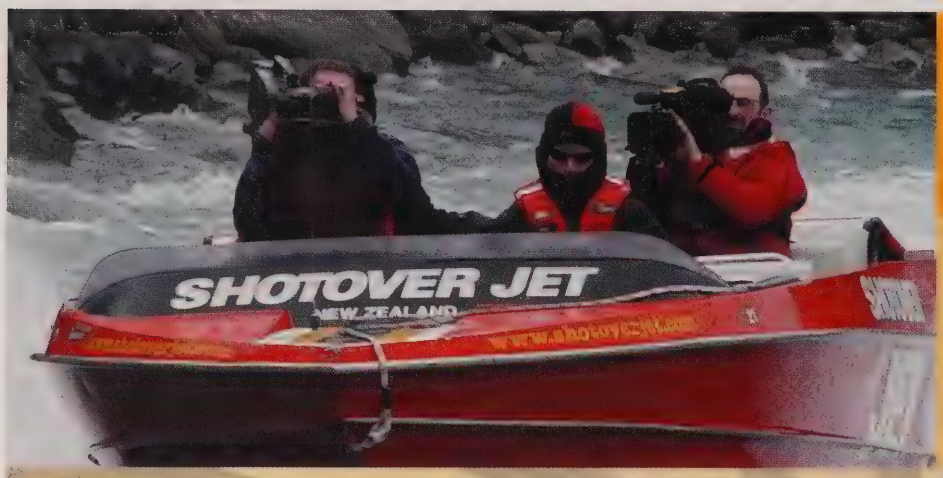
BIG LOSSES

The aggregated (or gross revenue) losses across all sectors of the Asia Pacific pay-TV industry, from platform operators to independent suppliers of programming, are estimated to total US$1.29 billion for 2003. The cost of piracy is currently increasing at a CAGR in excess of 10 percent.

"This is an alarming cost and it continues to escalate at a rapid pace. However, there have been too few efforts to regulate the issue," said Simon Twiston Davies, CEO, CASBAA. "It is essential that the industry, the regulators and the general community work together to address a problem that is becoming more pervasive by the month."

Under-declaration of pay TV subscribers in India dominates regional piracy numbers, contributing 72 percent of revenue leakage. The combination of unlicensed operators and pirated analogue set-top boxes in Thailand, Taiwan and the Philippines gives cause for a further 23 percent of the total amount. Hong Kong stands out in comparison with other developed regional cities such as Singapore, Seoul and Kuala Lumpur, reporting a gross loss of US$28 million from pirated cable and satellite subscribers.

For more, visit www.casbaa.com



Optical Disc Camera Takes a Beating

FROM the freezing cold and wet of a New Zealand winter to the choking heat of the Australian desert, Sony has been letting a number of local camera operators run amok with its PDW-530P optical Disc-based Camcorder in conditions that could only be described as extreme.

Four experienced camera operators put the new camera through its paces in conditions known to cause problems for tape-based systems - without any cover or protection. The endurance project was also recorded using a Sony DVW-709WSP Digital Betacam camcorder and the resulting pictures from both cameras have been edited together to produce a video.

Beginning in Auckland, New Zealand, Producer/Cameraman Martin Cleave was suspended horizontally with the camera from a helicopter, in 30 knot winds and driving rain, to record pictures of the city's famous Sky Tower and Lion Rock.

"The chopper was all over the place but the camera impressed me with its stability - there was no flashing in the picture and no tape jump," said Cleave. "It was the first time I had seen the camera and straight out of box I was able to pick it up and use it so it has obviously been well designed by people who use cameras."

From there the camera travelled to New Zealand's rugged South Island where DOP Paul Holland and Cameraman/Director Jeff Aldridge ventured into freezing snow fields and mountain rivers.

"We went jet boating on the Shotover river which involves riding at high-speed in very rough water with lots of twisting and turning," explained Holland. "The camera was bouncing off my shoulder with the force of the bumps and turns. We also placed the camera on the side rail of the boat so it was getting all the physical vibrations, and then outside the boat during 360 degree turns. I have had experience with tape cameras on motorcycles so I know what can happen but the optical camera performed flawlessly with no skips or jumps.

"It rained continuously and the camera also got splashed and wet in the boat and during the 4WD river driving but we just towelled it off and it kept running. It never skipped or dropped out, which disproved any perception of skipping in disc-based technology," said Holland.

TAKING IT TO THE SLOPES

Well above the mountain snow-line at Coronet Peak, the team spent three hours in zero degrees capturing sweeping images of skiers using a small jib arm and then hand-held shots while following downhill racing. From there they took the camera on a jarring 4WD journey along the Arrow River bed near Queenstown.

"I've seen conventional cameras have a lot of problems in these sort of situations where jolting causes the tape to de-lace, and moisture can cause head clogs and the tape can break," said Jeff Aldridge. "We pushed it very hard and had no problems, which is very encouraging for the format.

"When we got back to the studio the pictures were stunning," said Aldridge. "High and low contrast areas, which would normally make a cameraman cringe, looked as you would expect to see in them in real life - the shots were true to my expectations."

OUTBACK OF BEYOND

The Australian leg of the field-testing saw Sydney based DOP Paul Kolsky limpet-mount the Sony PDW-530P Camcorder to the side of a 4WD vehicle in Darwin. After driving along local beaches to subject the camera to salt spray, sand and humidity, the vehicle was driven the 1500 kilometres through the outback desert, to Alice Springs.

"The temperature was over 30 degrees Celsius and all there was out there was that fine, red outback dust, which went everywhere and got into everything," said Kolsky. "The road is quite rough and we went over every sort of bump we could find, from big jarring ruts to continuous 'washboard' ridges. We also went off-road to travel the roughest terrain we could find. During this time I literally only cleaned the lens."

As a final test the new camcorder was strapped to a professional skydiver who leapt from a small plane at 10,000 feet, free falling 5000 feet before opening his parachute.

"It is a really good test of the camera to be in free fall at 200 kilometres an hour, then go through the force of several Gs when the ripcord is pulled," explained Kolsky. "It also had to handle the force of the wind, the temperature difference between 10,000 feet and the ground, plus the jolt of landing.

"I have spent lot of time in the Northern Territory so I know how hard it is on cameras. Before the shoot I was nervous about using the optical disc camcorder up there but having done it, I would absolutely trust it in that environment and recommend it to others."

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JVC PROFESSIONAL

Open Spaceman

Phil Sandberg talks to cinematographer Allan Collins (ACS).

THE LAST 18 months have brought much recognition for the Allan Collins. In late 2002, this film maker from Alice Springs received the Australian Film Institute (AFI) Award for Best Achievement in Cinematography, while this September saw him become the first Indigenous Australian to become accredited by the Australian Cinematographers Society. Director of his own company, Walknpitchas, the 36-year-old's most current project is Dhakiyarr Vs the King, a one-hour documentary examining the imported laws of colonising Europeans and the traditional legal systems of Indigenous Australians.

Favourite Equipment and Why: I don't really have a favourite. As a cinematographer, I work with the whole range from Mini DV to 35mmm. Different projects have different needs.

Gear on My Shopping List: I hear there's a new mini HD camera coming out. I'd like to have a look at that. It's amazing that you could fit all that technology into a small package.

Really what I end up buying is filters because I can put a filter on any camera. Cameras are cameras but it's how you use it that makes the difference.

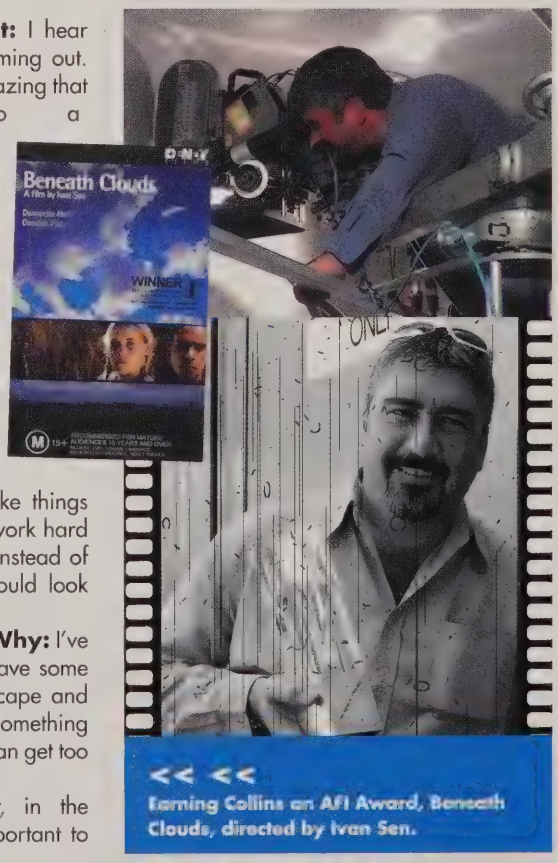
Something I enjoyed using recently was a Super-8 camera. You can apply all sorts of things to make footage look old, but if you shoot it on an old system it looks right. Bolexes and things from the past give you something new systems can't. Digital cameras make things look perfect and then you have to work hard to achieve a look that looks right. Instead of looking forward sometimes we should look back.

Where My Talents Lie and Why: I've grown up in Alice Springs and I have some understanding of space and landscape and how that influences storytelling. It's something I can do instinctively. Some people can get too caught up in the technical.

Any location, interior, exterior, in the city, they bring a character It's important to recognise that character. It's not just about composition. They are a character in a story. They do influence a story

I'm working in Sydney at the moment and people here are not as aware of space because they're surrounded by other people. In Alice Springs it takes you five minutes to walk to a space where people haven't walked for who knows how long.

At the end of the day, if you're a cinematographer it doesn't matter what camera you use, it's how you use it. Trying to make cameras behave like other cameras doesn't work. You can't make little cameras look like bigger cameras. If you have to use a particular camera then the style of the film has to fit somewhere in to what the camera was designed for. Otherwise you're kidding yourself. That's why I like to mix cameras up. It's not just a recorder it's for telling a story.



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Earning Collins an AFI Award, Beneath Clouds, directed by Ivan Sen.

Favourite production: Comedies, Westerns, there's good and bad in all genres, but I like them all, if they're done well. Close Encounters of the Third Kind is an incredible film, Jim Jarmusch's Dead Man is an incredible film. It's black and white. Speilberg, Kubrick, Don McAlpine, Dean Semmler, they're all great.

There's a fantastic book by Nestor Almendroz, A Man with a Camera. I like his philosophy. He's from Cuba and when he started out, he didn't have any equipment. Coming from Alice Springs you learn to make do. I get his philosophy. I like his ideas behind cinematography.

Plusses of the Job: You do get to travel a lot and meet all kinds of people from all walks of life. You don't just meet them, you get to really meet them, inside their kitchens. It really broadens your mind. I get to talk to them personally and intimately and really talk to them. You learn a lot about the whole world.

The Local Industry Needs: The Australian Government needs to support the Australian film industry a lot more. We're about putting up ideas about our culture and identity. People can come in with reality TV shows and how to build a better verandah, but so what? That's why SBS and ABC are so important. Without them we'd all be building a better verandah. We'd all be American.

The industry is suffering really badly at the moment. We keep losing great people because it's hard to make a good living out of it. We need to support Australian film makers of all types, put our stories on our screens. There's not enough money put into Australian productions.

For me, as an Aboriginal person, more personally, it's also about getting more Aboriginal stories out there from our perspective - from us not about us.

Future Ambitions: One thing about this job is you never actually get to the end. Once you've learnt one thing, there's another 20 things to learn.

Arrow

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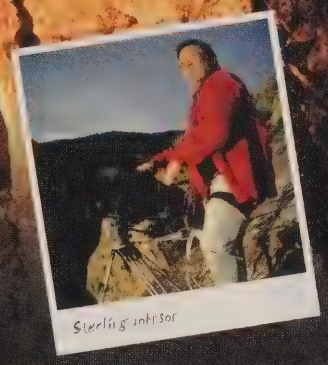
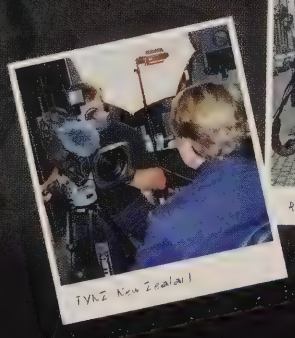
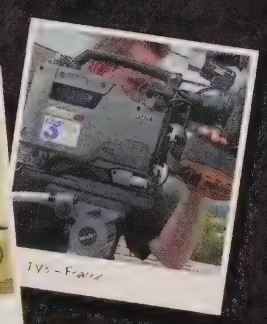
"Because my video work is in extreme conditions, I need camera support that's rugged, reliable and as light as possible - and I don't have time to 'baby' my equipment. "I chose Miller, and it has never let me down."

Sterling Johnson, Cinematographer







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Sorting Out Bugs with HDCAM and the Frazier Lens

AUSTRALIAN cinematographer Pieter de Vries, ACS, has taken the 'Panavised' Sony HDW-F900 CineAlta camera, along with the renowned Frazier Lens System, on a hunt for 'The Biggest and Baddest Bugs'.

That's the working title for a 90-minute wildlife documentary being shot by de Vries for the Discovery High Definition Theatre Channel. Hosted by the entomologist Ruud Kleinpaste, the documentary took de Vries as far a field as Florida and Arizona in the USA, along with Panama, Venezuela and Australia in the search for the world's largest and most venomous bugs.

Australian Jim Frazier invented the unique lens system, which allows subjects to be focused right up to the front element of the lens giving an impression of incredible depth of field. The lens can also be quickly and easily swivelled and rotated without moving the camera.

de Vries worked closely with Panavision, the manufacturer of the Frazier Lens, to modify the Sony CineAlta camera, in order to make its combination with the lens suitable for both fast moving documentary shooting and the precise skills needed to get the best out of the high definition format. Much of this process involved trying to reduce the overall weight of the camera and lens, including the fitting of a new handgrip and changing the viewfinder.

"The Frazier Lenses allowed us to work quickly, which is crucial for unpredictable animal behaviour," said de Vries. "You will lose the shot if you take five minutes to set it up, so the ability to make quick adjustments was important - the flexibility of the lens also enabled us to put together a variety of shots and create sequences very quickly.

"The design of the lens meant that we could have a lens on the forest floor, at the same height as the insects. Its depth of field also meant that insects could come as close as they like to the lens without losing the focus. When shooting like this in conjunction with wideangle lenses it gives a very confronting view of a dangerous spider. The combination of widescreen and HD gives audiences a lot to look at," he said.

SHOOTING CENTIPEDES

De Vries said the shots from the Frazier Lens could also provide unusual shooting styles.

"A pan is more like a tracking shot - when shooting a giant centipede for example, it looked more like I was tracking with it. The vertical movement is also able to move like a 'mini-crane' shot. The lenses can rotate through 360 degrees, and move upside down and sideways - it offers an amazing amount of flexibility."

de Vries is also mindful of the additional requirements of shooting in HD.

"When you're shooting at higher resolution, focus becomes even more critical," continued de Vries. "You have to be constantly mindful of the focus - it requires quite a lot of experience and the level of concentration can be quite draining.

"The Frazier Lens wasn't available on any HD camera until recently, but the lens compliments the camera well. When shooting in HD I also appreciate the ability to monitor images via the Serial Data Interface, which allows me to see exactly what the images are looking like there and then.

"The balance of the camera with the lens is good and it's manageable on a documentary style tripod," he said.

Flagship DVCPRO50 Camcorder

Panasonic used September's IBC to debut its new standard definition camcorder, the AJ-SDX900. The camcorder supports multiple shooting formats including DVCPRO50, DVCPRO and film-style progressive scan with cine-like gamma which Panasonic has introduced across all key cameras from DV to DVCPROHD.

The AJ-SDX900 features three newly-developed 2/3" 600,000-pixel IT CCDs with progressive-scan capability providing a high sensitivity of F13 at 2000 lux, 63dB signal-to-noise ratio and low-light shooting down to 0.09 lux (+48dB). Advanced 12-bit A/D DSP signal processing circuits provide improved picture quality, colour expression and luminance gradation, while a 12-axis matrix colour correction allows very specific colours to be adjusted without affecting overall colour tone. Moreover the AJ-SDX900 is featuring Cine-like Gamma that closely replicates the "look and feel" of film.

The camera is equipped with a super gain function with a maximum gain of 48dB, and a new time-accumulate digital super gain allowing an additional gain of +20dB (at 5 fps) that permits ultra-high sensitive shooting (as low as 0.01 lux at +68dB, +48dB super gain, +20dB digital super gain) for night-time acquisition. Digital super gain can also be used as one of video effects.

The AJ-SDX900 offers a maximum record time of 33 minutes in DVCPRO50 and 66 minutes in DVCPRO, and four 48kHz/16-bit digital audio channels in DVCPRO50. At just over 7.5kg fully equipped, the unit is lightweight, well-balanced and offers perfectly positioned switches. It also provides one-touch camera status report, interval REC for time-lapse recording, UMID recording, and an electronic shutter (speeds from 1/60 to 1/2000 sec), plus synchro-scan capability (1/50.4 to 1/248.0 sec.)

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Localism, Connectivity Key to Industry Health

> "The film industry is where culture meets commerce."

FREE TRADE, a strong local content sector and easier access to broadband topped the list of concerns at a breakfast seminar entitled Digital Hollywood, held recently at the Art Gallery of NSW.

Joined by Animal Logic MD, Zareh Nalbandian, Jodi Matterson, producer of the upcoming feature Thunderstruck, and Judi Tucker, Executive Director of FIBRE, Kim Dalton, Chief Executive of the Australian Film Commission warned that a free trade agreement with the US could be an impediment to the industry down the track.

The AFC Chief Executive said that if Hollywood powerbrokers such as Motion Picture Association of America President, Jack Valenti, could see opportunities to expand their business under the FTA, then the local industry should take notice.

"We should retain the capacity to intervene in years to come," said Dalton. "We do not know what the new media space will be, but we do know that the studios will be major players. Unless we reserve the right to intervene we'll be crushed, losing what space we have now.

"The film industry is where culture meets commerce. US studios dominate and we are fringe dwellers. Digital technology has profound implications for the whole Australian knowledge service industry. The digital film industry has a fundamental role in this, but we are not sending Government the right message."

Zareh Nalbandian joined Dalton saying that Australian was currently enjoying success as a facilities provider because it was recognised as a film making country.

"If we concentrate on facilities and not film making, we'll become like Mexico because Mexicans can buy computers. If we lose our identity, we won't have an industry at all," he said.

Judi Tucker of FIBRE (Film Industry Broadband Resource Enterprise) pointed to the wine industry as a cooperative model for Australian content producers to follow saying it is "Australian Wine" that is the brand overseas, not New South Wales or Victorian or Western Australian wine.

Tucker said stronger pressure from Government needed to be placed on telcos to think more about their customers' businesses and that if larger carriers won't listen, then there must be incentives for smaller firms to work together in a cooperation with their customers and each other. She also urged telcos to work with other utilities saying that wherever there is digging - whether it is for roads or water or gas - fibre networks must also go in.

"Affordable bandwidth is the key to the future of the digital studio," she said. "SMEs shouldn't have to 'shoehorn' themselves into a telco product."

Zareh Nalbandian urged a recognition that the digital content industry is still in its infancy, and that support is needed to keep talent and ensure that successes to date were not simply a flash in the pan. The AL MD pointed to the need to address tax incentives for digital production, possibly in the form of salary rebates, saying that such subsidies are commonplace around the globe.

Finally, Kim Dalton stressed the need for a coherent Government policy framework to affirm a commitment to grow the Australian content industry.

"Everything would flow from there," he concluded.

<< <<
FIBRE EXECUTIVE DIRECTOR, JUDI TUCKER.

AFC CHIEF EXECUTIVE KIM DALTON (LEFT) WITH ANIMAL LOGIC MD ZAREH NALBANDIAN.

Discreet, Kodak Partner on Digital Film

SHOWING that it intends to remain relevant in the digital age, Eastman Kodak used this year's IBC show to announce a collaboration with Discreet that will see Kodak's advanced monitor calibration and film look preview system running on Discreet's lustre digital colour grading platform.

The calibration system consists of a tri-chromatic sensor attached to the display device. The sensor connects to the host computer via USB and is used with Kodak's calibration software. Together, these can drive the monitor to a calibration point in a few minutes. The process entails displaying a series of specific colour and neutral scale patches on the monitor, measuring the monitor phosphor R/G/B outputs, and then creating a 10-bit log "profile". The profile is stored and the data can be tracked to observe a monitor's performance over time.

Once the monitor is calibrated, the Kodak software is used to build algorithms that provide an accurate simulation of print film stocks such as VISION 2383 and VISION PREMIER 2393. The operator follows a process to generate the algorithm for a specific print film type and aim position. After the algorithm is generated, it is applied to the images on the monitor creating a 'print film simulated' space.

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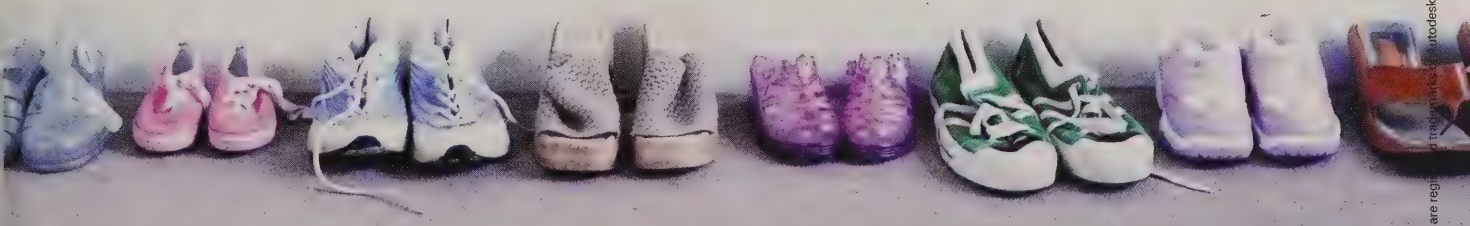

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Big Deal for Editel

WHEN Melbourne-based Editel became one the first Australian post-production houses to install the Avid Media Composer Adrenaline in July 2003, the timing could not have been better. The company had just secured the contract for the new Channel 7 television game show Deal or No Deal.

In addition to Media Composer Adrenaline, Editel's arsenal of Avid suites includes an Offline Media Composer and an online Media Composer 1000.

Deal or No Deal is a weekly television game show in which contestants answer general knowledge questions in the hope of winning a $2 million prize. Two editors and a sound engineer work on the program at Editel. One episode is recorded each Friday for screening nine days later on Sunday evening. The show is loaded overnight on Friday with editing commencing the day after; the editing phase is usually completed by the next Wednesday. The audio mix typically begins on Tuesday and is completed by Thursday.

When it comes to the post-production of Deal or No Deal, the speed of Media Composer Adrenaline has proved a real asset to Editel.

"Originally the post-production of Deal or No Deal was to be offlined in one suite then onlined in another", said Geoff Satchell, MD of Editel. "However this would not have been ideal as the lack of compatibility between the Avid offline and our existing online suite would have forced us to undertake a great deal of re-laying of graphics and effects. But, thanks to Adrenaline's mixed resolution capabilities we're able to post-produce each episode wholly within this system. Graphics need to be inserted once only and the previous week's teasers can be edited using existing low-resolution or high-resolution footage. This 'single system' approach also means that it's only the vision that has to be onlined to high-res, thus saving us valuable time. Additionally the four tracks of audio can be outputted at once, minimising the amount of VTR usage."

> "Originally the post-production of Deal or No Deal was to be offlined in one suite then onlined in another."

"Negotiating lengthy timelines is very fast with Adrenaline and with the system's five real-time video streams the need to render is significantly reduced. Deal or No Deal includes many graphic elements and it is not uncommon for us to have six video layers simultaneously incorporating graphics and effects. Without the need to render we can produce and alter these effects quickly and easily."

Editel has also benefited from the 601 video output feature of Media Composer Adrenaline.

"Because of the large number of effects used with Deal or No Deal - mainly animated graphics - we need a system that maintains a high-quality result", said Senior Editor Luke Collin. "With its support for the 601 video format Adrenaline delivers on that front. We also routinely use Adrenaline's 3D corner pinning feature for graphic treatments."

Forward Velocite with Media 100

ARTARMON-BASED edit house Velocite has expanded its range of projects since the installation, in February, of Media 100's 844/X editing and design system.

Recent projects have included the new Mercedes TVC campaign as well as commercials for the Officeworks retail chain.

The first job for the 844/X system was a Hi-Definition Showreel Project for the Seven Network. Material for the showreel came from HD-Cam tapes shot in the field, re-transferred film rushes and digital animations. The project - 'One Digital Day' was then looped for transmission on digital Channel 77 with 576p picture resolution, and Dolby Digital 5.1 sound.

The twenty minute program was edited by John Buck and Laura Gohery on two Media 100i's and then re-conformed from EDL's. A separate pass was made for an OMF to be supplied to a third party mixing the soundtrack in Protools.

Video was digitised and manipulated in true 10bit uncompressed quality.

Once the program was re-conformed, supers were created and animated within the compositing tools of the 844/X in real time. An animated graphic opener, created in After Effects, was then imported and added.

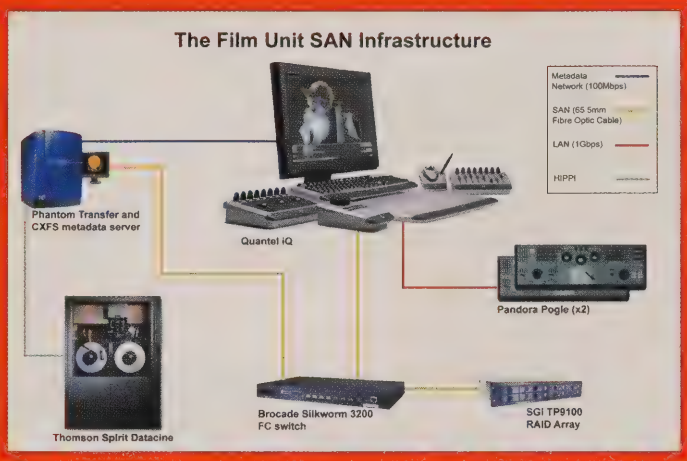
This was followed by a project for Channel 7's DIY program, Ground Force, where editor Andrew Cooke used the 844/X system to produce weekly three to five minute "do it yourself" videos for distribution to AOL-7 broadband subscribers.

The system was used throughout the entire process from digitising to editing to audio finishing. Rubber banding on audio tracks enabled greater accuracy during the mixing process. All footage was shot in 16:9, but converted to 4:3 for delivery.

A recent job demanding quick turnaround was a report for SBS TV's Dateline current affairs program. Entitled Iraq Museum, the story was brought to Velocite on a Friday by videographer Olivia Rousset with an on-air deadline of the following Wednesday.

Rousset had completed previewing her camera tapes from a five-week shoot in war torn Iraq and wanted the 20-minute story edited, sound mixed, picture graded, de-interlaced, 'grained' and played out with and without sub titles by then.

Senior editor John Buck worked with Rousset for four days on a Media100i system creating low resolution 'screening' tapes of the story edit for Exec Producer Geoff Parish and Producer Amos Cohen. The final edit was exported by EDL to the company's 844/X system and re-conformed at an uncompressed 10bit resolution.



Film Unit Fires Up Quantel iQ

NEW ZEALAND'S Film Unit is the first facility to couple the Quantel iQ with the SGI CXFS file system, allowing increased file transfer speeds and diminishing downtime when exporting and importing files. Having also installed Quantel's Qcolor system, the post-production house that provided laboratory, telecine, digital, and sound mixing services for the Lord of the Rings trilogy, selected Quantel's iQ for its Resolution Co-existence and ability to handle all file type structures within the one timeline.

Point Annihilation, a short film by Virginia Heath is the first Film Unit project to make use of the new iQ system. The film was produced at 25fps before a data file was created from the iQ to construct the theatrical version. The iQ conformed, edited, colour graded and produced the graphics for the job, which was shot on both Super 16mm and DV. Super 16mm film was scanned at 2K on The Film Unit's Spirit Datacine, and the DV footage was imported and then up-scaled and de-interlaced using the iQ.

Another film post-produced by the Film Unit's iQ is Skin and Bone. Shot on Super 16mm, it will be the Film Unit's first 16 to 35 mm film IQ 'blow up'. According to Film Unit Technical Director, Ian Bidgood, "The iQ will be used to conform the editor's EDL, fades, dissolves and titles. In conjunction with iQ's Freeflow, we are able to grade the 2K pictures in realtime. Any tracking grading shots that are called for will be graded via iQ Colour. Once the mastering is complete we are able to supply all masters in any format and standard from the 2K data transfer."

Film Unit head Sue Thompson says the most significant aspect to the installation of the entire IQ suite is its ability to bring the Unit's extensive film experience to the digital intermediate table. She believes the digital intermediate process is likely to supplant 16mm blowups and Super 35 squeezes, especially those films that have a specific colour palette for storytelling purposes.

"Peter Jackson has really paved the way for this kind of work in Lord of the Rings: Fellowship of the Ring," she says. "Fruity looks, such as bleach bypass, rich colour backgrounds that don't effect skin tones, or specific looks for scenes such as flashbacks, are all workable options with realtime 2K processing of the Quantel/Pandora Freeflow system."

Gettin' Square at Atlab

POST-PRODUCTION for the recent crime comedy, Gettin' Square (directed by Jonathan Teplitzky) was finished by Atlab. After completing rushes on location in Queensland, Atlab was also responsible for the digital opticals, compositing, and grading of the movie.

Digital supervisor, Robert Sandeman, used Shake for all the compositing and titles. Film was scanned using the company's Arrilaser. 4K

scanning was used to import data for digital tasks. Colourist Olivier Fontenay completed the grading.

Voodoo Flies with Smoke

BUTTERFLY MAN is the central character used in the NineMSN "Virtual Life" web site TVCs recently completed at Voodoo Non-linear.

smoke editor Tony Kavanagh colour graded every shot and, in conjunction with blurred mattes, created a dream world where butterfly man existed. Complex rotosplines and motion tracking were used to completely replace the background.

Based at Fox Studios, the Sydney company recently upgraded to Discreet's smoke and offers a range of services including offline and online editing, compositing, DVD authoring, bulk duplication and release dub dispatch.

"Smoke has a wealth of features that my old system lacked, including full colour correction, Sapphire sparks, multi point tracking, and surface textures," said Simon Cranch, Owner/Editor, Voodoo Non-linear. "No longer will we need to export sequences to third party applications for compositing, thus saving valuable online time. With the purchase of the Smoke, we will be targeting more higher-end work."

Voodoo Non-linear will employ freelance editor and Smoke artist Tony Kavanagh on a regular basis, enabling the company to offer the Smoke as a dry-hire suite. Cranch also works closely with Stephen Robinson Productions to provide promotional materials to the major feature film distribution companies.

"Not only do we create trailers for new films, we also re-cut and modify American and British TVCs for the local market. This usually involves re-editing the spot to suit Australian requirements," explained Cranch. "We add new graphic elements, re-voice and then dispatch via Adstream or Dubsat to networks Australia wide."

→ DISCREET LIGHTS UP COMBUSTION 3

Discreet's combustion is now in its third incarnation. The latest version of the company's VFX and 3D compositing desktop software has been tailored for producers of web content, videos, or even HDTV to feature films on a PC or a Mac.

combustion 3 enhancements include: customisable brushes, saveable presets, timeline markers, and DV capture and output. Discreet also continues to work directly with plug-in developers to ensure advanced support of numerous plug-ins including integration with various Adobe After Effects and Photoshop plug-ins.

New features include

* Editing Operator - integrated editing, removing the need for non-linear editing software (NLE) for simple editing tasks.
* Expressions - The JavaScript expressions allows combustion artists to easily create complex animations - eliminating tedious repetitive work.
* Flash Output - Vector paint and animation interface tools in combustion 3 software allow creation and output of Flash animation.

OPS Pitch

"I'm already realising revenue with the Paint Flash output from the beta version of combustion 3," said combustion 3 software beta tester Lee Roderick of North Gate Studios in Walnut Creek, CA. "For corporate productions, I usually provide just one piece of a project for a larger production or event. So when deliverables are discussed and my clients want web banners or executables they can

send out via email, I have to surrender my original content to another shop. I don't claim to be a Flash designer-but with a little planning, I can hand my clients a full resolution event module and a similar look and feel Flash executable or web banner in one session. I probably don't have to say it, but that rocks!" combustion 3 is expected to begin shipping for Windows XP and Windows 2000 in fall 2003, and for Macintosh OS X in early 2004.

For a complete list of combustion 3 new features go to: http://www.discreet.com/combustion3

Reach Discreet in Australia on +61-2-9876 8355 and in Singapore on +65-6555-0116.

→ CINTEL TO LAUNCH SCANNER 'REVOLUTION'

Next year will see Cintel launch what it claims is "... a revolutionary film scanner to suit the demanding requirements of the data scanning market".

Using a 4K silicon head, never before used for film scanning, the machine is aimed to offer over sampled 2K scanning at a rate in excess of 7fps and a 4K scanning rate many times faster than the nearest price competitive scanner. The new device will incorporate an all-new digital servo system offering speed without compromise to stability.

The new scanner will feature High Speed Data Link (HSDL) allowing it to interface with existing technology in the post-production environment, and offer a cost effective means of data transport around the facility.

Selling for less US$1 million, Cintel says its new scanner will be a fast and cost effective solution for all data scanning applications. The device will address the needs of image acquisition from film whether they be for post production, film effects or those scanning for archival purposes.

Adam Welsh, managing director for Cintel says "The development of this new product is Cintel's response to the constantly evolving data scanning market where the demand is to transfer film images to data rather than video for further digital processing downstream."

Cintel's distributor in Australia is Quinto Communications. Reach them on +61-(0)3-9558 9377, or email: sales@quinto.com.au

→ ENHANCEMENTS FOR SPECTER FS

Thomson used September's IBC to show off a workflow boost to its Grass Valley Specter FS Virtual DataCine in the form of a new central storage environment with, what the company claims, is without any bandwidth or speed limitations. Thomson also announced details of software version 5.0 for the Specter FS and Specter 2K Virtual DataCine.

Called the Grass Valley Open DFA (Digital Film Applications), the new storage environment for the Specter FS uses a storage area network (SAN), allowing multiple users to simultaneously access the image data for various applications.

The Grass Valley Open DFA SAN uses standard IT components for hardware and software, including a standard file system, for easy integration of third-party applications into the SAN. Thomson provides an API to enable third-party access to the streaming file format used in the Specter system to guarantee the real-time playback performance. One of the first to take advantage of this is Interactive FX and its Piranha editing, compositing, and colour correction tools as well as an array of transform and warp effects.

On the data crunching side, the new software version 5.0 for the Specter FS Virtual DataCine supports the SGI server platform O300, including the 2GB fibre channel disk arrays. Features include multi-resolution timeline support - an operational feature which offers automatic real-time up and down conversion of different resolutions to the required output format. Colourists can combine different source material-standard definition television, HD, and 2K - within a single project. Equipped with the software version 5.0, the Specter Virtual DataCine offers full Gigabyte System Network (GSN) support. This means 2K real-time film data input and output using standard hardware interfaces and protocols are now available.

Additional new software features include a matchbox reference store and CineReel/HDReel-connectivity. An API offers a remote control interface for exchanging EDLs, for accessing data and thumbnails, as well as for controlling matchbox functionality.

Reach Thomson in Australia on +61-(0)3-8544 3600 or email: austnzsales@thomson.net

> Thomson provides an API to enable third-party access to the streaming file format used in the Specter system to guarantee the real-time playback performance.

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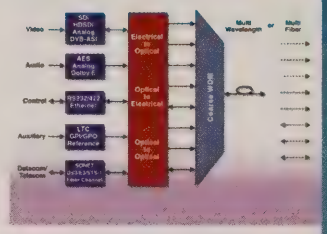

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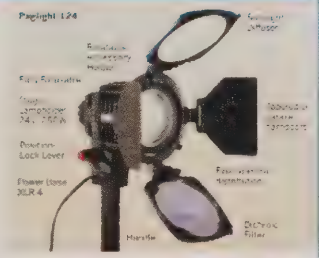
CAMERA LIGHTS

PAG now have a comprehensive range of camera lighting equipment ranging from the ultra-compact mini-cam C6 thru to the impressive new L24 compact and portable 250W fill-light. A full range of low-cost camera options are available including diffusers, barndoors and dichroic filters.



PAG ADVANCED BATTERY SYSTEMS

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The Analog Way XTD820R is a professional computer to scan converter capable of converting very high resolution graphic images (1600x1200) to broadcast video with full genlock facilities. The conversion is done in real – time from a PC or Macintosh computer and gives analogue or SDI digital outputs. An HDTV version is also available!

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- The KM1 is a 1RU ultra slim panel with 40 configurable buttons and two backlit LCD screens for source and destination information.

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- **Spectrum Viewer** – a 70 MHz spectrum analyzer that enables the IF spectrum of a remote receiver to be viewed and controlled through a PC computer.
- **SkyMaster** -an automatic steerable pod antenna system with an integral GPS Receiver.
- **MM200** – provides users with the ability to send multiple digital signals over a single RF microwave channel.

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>> ITV technical producer, John Pearce. >> Rugby IBC master control.

Phil Sandberg looks behind the scenes at the Rugby World Cup International Broadcast Centre.

Festival of the Ruck

WITH twenty teams playing 48 matches over 44 days in 11 venues in 10 cities, coverage of the 2003 Rugby World Cup sits somewhere between an Olympic Games and a Grand Slam tennis tournament.

Serving an estimated over 3.1 billion worldwide, Australia's Seven Network constructed an International Broadcast Centre at its Sydney station (ATN-7). Using a crew of around 300 and around 10-11 cameras per match, the broadcaster produced digital, widescreen, standard definition as the basis for its coverage

INTERNATIONAL BROADCAST CENTRE

Housed in an annex of Seven's Sydney Station (ATN-7), the International Broadcasting Centre or TDC (Transmission, Distribution and Control) provided feeds for Seven Network domestic coverage, UK Network ITV, Television New Zealand (TVNZ) and International Management Group subsidiary, Trans World International. The TWI feed was supplied with cleared English commentary for delivery to a number of rights holding countries, while TVNZ used its feed to further supply Japan's JSky Sport.

John Lock, Technology Group R&D Engineer with the Seven Network, says with 11 venues in 10 cities, the Broadcast Centre received 45Mbps feeds via the local carrier Telstra's fibre optic-based Digital Video Network (DVN). Two satellite uplinks were used at venues with no DVN connectivity, while Melbourne matches were fed to Seven's nearby broadcast centre via cable before being passed on to the Sydney centre. Satellite back-up with main and standby feeds was also available.

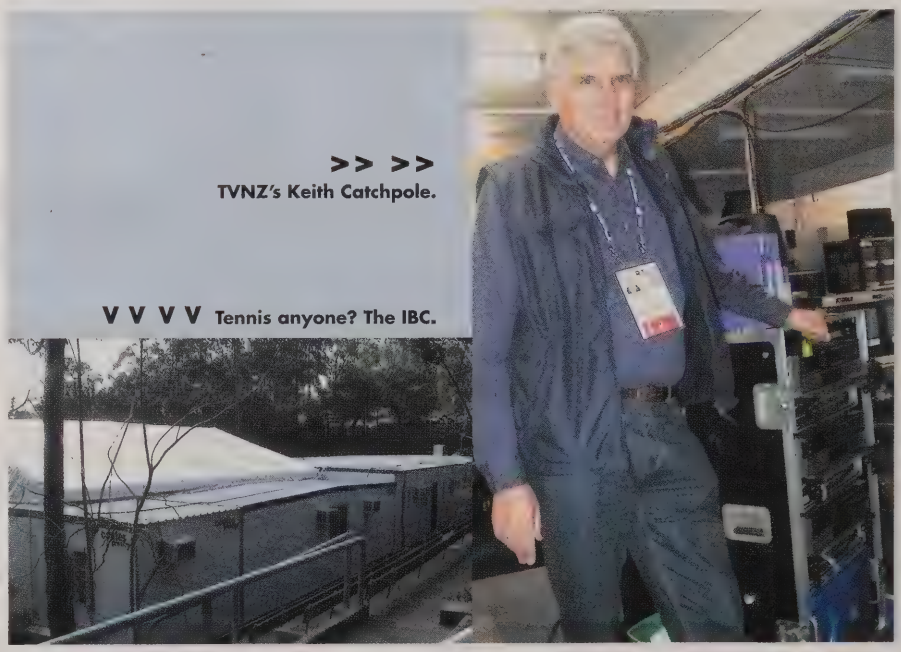
Match A and match B feeds would be sent to Seven domestic service and ITV in 16:9 SDI, while remaining rights holders received 4:3 SDI. Analogue 4:3 was used for monitoring.

Other areas in the Sydney Broadcast included a commentary services centre with off tube booth, production Q&A for monitoring, and two stations for Rugby Union Commissioners to monitor player conduct.

ITV

The main Broadcast centre also housed uplinking equipment for the UK ITV network. Using Tandberg encoding, ITV feeds were sent via fibre and satellite to BT facilities in Los Angeles before being sent on to London. Remaining ITV facilities were housed in temporary buildings on a tennis court at the Seven site.

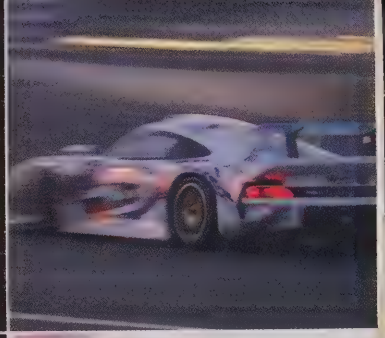
According to ITV Technical Producer Jon Pearce, commentary, graphics and analysis would take place at LWT in London for all lead-up match coverage, while a crew of

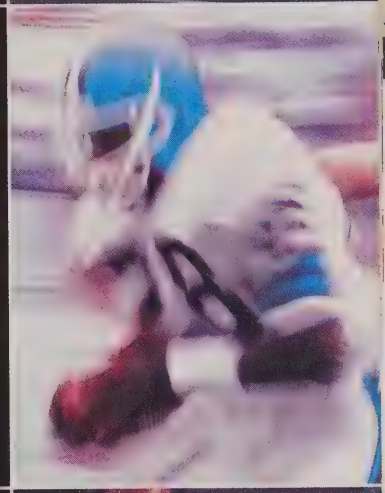


>> >> TVNZ's Keith Catchpole.

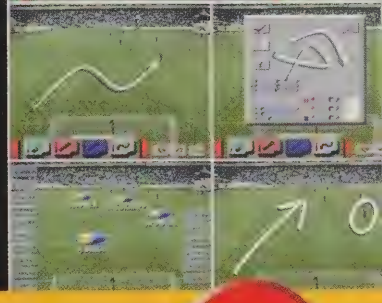
V V V V Tennis anyone? The IBC.

What's the.... point





POINT is designed for real-time graphics video illustration, or 'telestration' and has been enhancing live broadcasts since 2000. Based on a touch screen control, the system offers unprecedented power, quality and flexibility for telestration applications. If you have something to explain in a live situation there is no other product that can do it as well as POINT. It's range of tools provides the facilities for the presenter to dynamically illustrate events with captivating graphics and all under finger tip control.



- **Easy to use touch-screen controls**
- **Freehand draw, point, graphics and animation**
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CONTINUED FROM PAGE 22

around 50 was flown to Australia for the finals. Separate feeds and commentary were provided for viewers in Scotland and Wales.

ITV took a 16:9 feed from Seven via a small MCR before sending to the UK. Coverage also included tactical feeds, and pre/post match unilateral material provided by three ENG crews. ITV had no unilateral cameras at matches, but took commentary from its own sideline reporters.

TVNZ

Coming from a country where Rugby is almost a religion, it was no surprise that TVNZ should have the biggest foreign broadcast facilities. As well as JSky Sport, TVNZ also housed facilities for South Africa's MNET, including a highlights edit suite staffed by five.

According to Keith Catchpole, TVNZ executive engineer, the New Zealand broadcaster used a crew of 35, working in two shifts to produce live coverage of 48 matches with six matches on delay.

The TVNZ "shed" featured MCR, including GVG switching, camera control, and EVS servers for producing stings, tails and transitions. The facilities also housed a 4: 3 SDI three-camera studio, and Avid and Digital Betacam editing suites for producing highlights packages. A separate room housed off-tube commentary facilities. TVNZ also employed unilateral OB feeds via an SNG truck with a crew of five.

Commentary and graphics would all be added in Australia before relay to New Zealand (three-hour time difference), while feeds were also sent to Pacific Islands, West Coast USA and South Africa.

SEVEN'S HOME FRONT

Using the superior signal path of its HD control room, Seven's domestic coverage of the championship was fed from the international broadcast centre. From the control room, two versions of mainstream coverage were created - 14:9 PAL for analogue viewers and 16:9 standard definition for digital DVB-T reception.

While mainstream DVB-T coverage went out on digital channel 72, another "channel" was used to delivery and enhanced statistics service. Developed for Seven by Sydney company, Ruzz Technology (www.ruzz.com), the service featured a window with match vision wrapped by statistical information provided by Unisys, host of the Official Rugby World Cup 2003 Web Site (see box item).

A producer and two operators also gathered information for the statistics service, including a results ticker, background information and a "thought for the day".

Seven also provided alternative language options for its digital service, taking feeds from foreign broadcasters, including French and Japanese.

Both digital channels went out at a rate of 7Mbit/sec, including audio. According to John Lock, the digital services were run at the same bitrate for ease of switching between services, and to provide enough bandwidth for both the fast moving nature of the game and an EPG as well.

Rugby fast facts

The schedule: every team playing 44 matches over 44 days in 11 venues in 10 cities

Audience: estimated over 3.7 billion worldwide

Media facilities: international broadcast centre at venue network, Sydney wide media headquarters, radio precinct, Sydney CBD

Host crew: around 300

Coverage: 1011 cameras per match, digital, widescreen, standard definition, 4:3 analogue, mixed letter from digital feed

Rugby on the web

The Official Rugby World Cup 2003 Web Site was expected to attract four million page impressions per hour during the Cup. Developed by Microsoft Australia, the web site ran on a Unisys ES7000 server featuring 16 Intel processors running Clustered SQL, SQL 2000 Enterprise and Microsoft Content Management Services (MCMS) built on Microsoft Windows Server 2003.

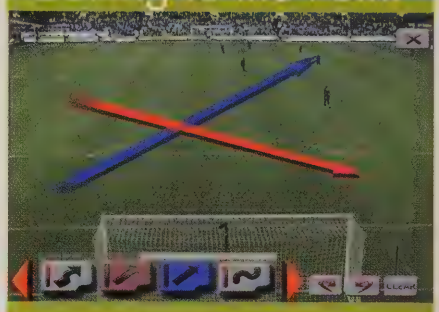
The site took information feeds from the official scorers providing real time information, scores and player statistics during each game. Some 20 editors worked from 9am to midnight daily during the tournament itself.

A team of approximately 15 people supported site development and modification efforts during the tournament.

The site also featured links to individual sites managed by TWI International and run by Real Media.

http://www.rugbyworldcup.com

Telestrators: Getting to the Point



Recent years have seen sportscasters around the world licensing their use of live, touch screen Telestrators (or televisors) to outline team plays or highlight ball movement. The Rugby World Cup was no exception.

Point is a "video writer" from UK company, E-Motion Ltd, designed in conjunction with Sky Sports. Features include Touch Screen Control, Freehand Draw, Paint, Graphics, and Animation, Real Time Operation, User Definable Menus and Tools, Windows 2000 compatibility, 10-Bit Broadcast Quality, Analogue or SDI.

During the Rugby World Cup, the system saw action with Channel Broadcast Australia for use by a number of sports broadcasters covering the tournament. Installations included both studio and OB systems.

South African pay-TV operator MNET purchased POINT systems for use on its sports programmes, including its Rugby show, Head to Head.

Point was also chosen by Ireland's leading broadcaster RTE for use on its sports shows for the Rugby World Cup and Soccer shows. A full studio and OB system were provided.

The Kick Off

As part of the Rugby World Cup Opening Ceremony telecast, Seven shot performances by "drummers" clad in country uniforms standing on the Sydney Harbour Bridge, as well as on and around the Sydney Opera House. Crews included steadicam, crane and copter mounted cameras, while audio and comms was provided by the PA People.

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Available in video only and audio/video configurations the TB 2000 series provide the ideal link from analogue to digital video signals and back again. More than just frame synchronisers the TB 2000 series allow transcoding between SDI, composite & component signals with all outputs simultaneously active from any selected input.

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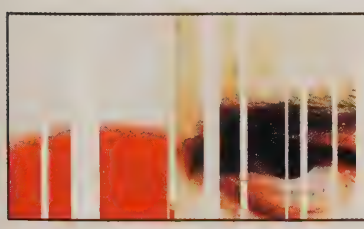

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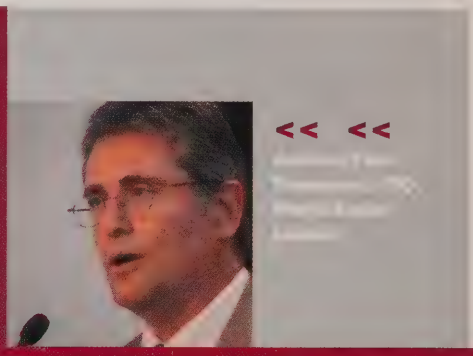

Digital Radio: Brands or Broadcasters?

A BATTLE is underway in Australia over the future of radio, a future that will eventually be digital. It is, however, is not simply a battle over technical standards, but more so about whether existing radio operators continue to be broadcasters with their own infrastructure and spectrum, or content providers to third-party transmission service companies - effectively becoming "brands".

Not limited to radio, it is a question that will have to be faced right across the electronic media industry and something that terrestrial TV will have to deal with as the Foxtel offering gains strength through its digital conversion.

The question of digital radio in Australia, kicked around for nearly a decade, has been overshadowed, in recent years, by the introduction of digital television. As far back as 1995, the then Labor Government made pronouncements on DAB, but it has been a consortium of Commercial Radio Australia and the public broadcasters that have provided momentum since then.

Despite being behind digital radio trials in Band III and the L-band from Parramatta and, finally, Chatswood in suburban Sydney (supported by digital radio kiosks in retail outlets), the consortium says it has been "frozen out" out of trials in Melbourne. The ABA has endorsed trials in Sydney and Melbourne by Commercial Radio Australia (CRA) and Broadcast Australia (formerly ntl) respectively on VHF channel 9A for a period of up to eighteen months.

According to Joan Warner, chief executive officer of CRA, the ABA is "pre-emptively trying to set Government policy by stealth. It is shortsighted and deliberately provocative and fails to take into account the billions of dollars of investment by existing broadcasters in free to air radio in Australia.

"The announcement which grants a digital trial license to Broadcast Australia - a tower operator - establishes a dangerous policy precedent which effectively devalues our licences, destabilises the LAP system and threatens the industry's future."

CRA says it rejects any proposals which duplicate the UK model where broadcasters become part of a digital multiplex operated by a transmission service provider. CRA claims this will lead to valuable public spectrum being held by an organisation with no public interest or community service obligations, and, to radio stations being charged exorbitant access fees. The industry body has requested the Communications Minister and the Prime Minister overturn the decision.

<< <<
Commercial Radio Australia chief, Joan Warner.

"The ABA's decision to grant scarce digital VHF Band 3 spectrum to a tower operator and third-party, Broadcast Australia, is unprecedented," Ms Warner said. "We have stated to the ABA on numerous occasions that the existing broadcast community must have the major voice in its own future and the key role in developing the technology that is best for the Australian market. We were under the impression that the Government also shared this view. "

It was a view that Warner also espoused at a recent digital radio forum hosted by the ABA. The forum formed part of the consultation process of the Digital Radio Study Group, established in early 2003 by former Minister Richard Alston and comprising the Department of Communications, Information Technology & the Arts (DCITA), the ABA and the Australian Communications Authority (ACA). Prior to the replacement of Alston by Daryl Williams, the Group was scheduled to deliver its report before the end of November.

"The commercial radio industry firmly believes that any discussion about digital radio in this country is really about the future of our industry," said Warner at the forum. "We don't in Australia, we believe, have the same drivers as in the UK or Europe to adopt digital for the purpose of allowing new entrants or creating diversity. We've got quite a different a different radio landscape and regulatory regime to begin with."

Warner cited figures that Australians enjoy a greater choice of radio stations per head of population than anywhere else in the world - some 260 commercial radio licences, five national services, a number of SBS services, 333 community broadcasters, 99 aspirant community broadcasters and 182 high-powered narrowcasters.

Making reference to the efforts of the CRA/public broadcaster consortium, Warner said there is proof of the limitations of L-band being the suitable spectrum to replace AM and FM broadcasting across the continent, and that the industry had not "rushed like a lot of lemmings to adopt any one technology".

"Australia does not have the critical mass to drive technology uptake. We also did want to be too early or pre-emptive adopters of technology," she said.

"We've been able to note the lack of startling success in UK or European development, although while I believe radio stations in the digital space in the UK are not making much if any profit, third-party spectrum licence holders have a very profitable business. In the US, we've also seen a stalling in the development of the US

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standard, plus we see the glacial speed with which the promise of the Japanese system is being developed.

The CRA CEO went on to say that the industry wanted to explore the consumer and advertiser propositions of digital radio and from that develop a business case.

"For there to be any future for digital radio in this country, it must be based on a conversion model and that conversion model should allow for all broadcasters in the broadcast services band to migrate, over time, to digital," she said.

"If Government is seriously committed to digital radio and wants to facilitate the quick rollout of the technology and the development of compelling content, one way to do this is waive the $12 million annual licence fees that radio broadcasters pay. Over five years this would equate to $60 million and aid significantly in fast-tracking the digital radio roll-out."

THE MULTIPLEX VIEW

Also speaking at the forum was Clive Morton, Broadcast Services Director with Broadcast Australia - the potential multiplexer.

According to Morton, it is inevitable that that third-party transmission providers will arise as the industry moves to digital.

"One of the realities of implementation of a multi-carrier OFDM modulation scheme is that it creates a digital ensemble or multiplex. The licensing and management of a multiplex is something that the industry and the regulator will need to some to terms with.

"Seen by some, of course, as the dark side, is the dreaded multiplex operator - the new and critical entity in the digital radio value chain, I would suggest. Between the broadcaster, the intermediary level of the MUX operator and the transmission service provider.

"Certainly the UK experience is predicated on the multiplex operator enabling the individual station broadcasters to get all the cost savings from economies of scale in the transmission and multiplexing operations. It ensures that the multiplex capacity is used to maximum capability and efficiency, based on market forces, technical issues and consumer standards. It also provides a central role to coordinate the development of technical improvements, data services and new application developments.

One possible model, according to Morton, is that station broadcasters pay the multiplex operator a fixed rate for capacity, depending on the bandwidth used. In turn, the MUX operator contracts as transmission service provider to deliver the technical service. As well as economies of scale benefits, it also ensures that the transmission operators are handled with one point of contact, planning, decision making and expertise, which provides further speed and efficiency benefits.

"The commercial relationship between the multiplex operator and the broadcaster could also give incentives to the multiplex operator to accelerate consumer take-up," said Morton. "Under the UK model, the broadcasters pay the MUX operator a variable fee based on their digital radio advertising revenues and the number of listeners to their digital radio service."

THE STANDARD

As to possible technical standard, Morton stated his belief that Eureka 147 (DAB) and Digital Radio Mondiale (DRM) were complimentary technologies. A view echoed by a number of forum speakers. He pointed to moves overseas which will see the development of DAB/DRM and other cross platform receivers.

"The convergence of platforms is inevitable and reflects the benefit of each as the constituent platforms in a complementary environment," said the BA Broadcast Services Director. "As 3G receivers become ubiquitous there will be the possibility of incorporating a digital radio receiver chip into handsets, allowing them to become receivers without using bandwidth to stream audio and associated content.

"Although 3G may have the potential in the long term to carry streamed audio in its own right, it is a platform developed for telecommunications and information at a glance. Most requests for major data downloads would overload the network capability.

"I envisage the establishment of both Eureka DAB and DRM platforms. I certainly do not see any sense in relinquishing the excellent propagation characteristics of MF for [DRM-based] wide area coverage, particularly servicing sparsely populated regions. However, the DRM standard needs some evolutionary development.

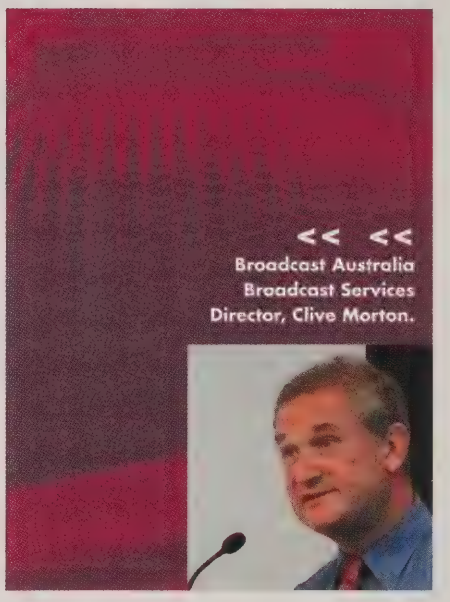
BRAND POWER

One organisation likely to take the "brand" option in the transition to digital is World Audio Limited. Broadcasting to a potential audience of 2.5 million in Sydney's western suburbs, with 15 additional transmission sites going online before year's end covering a potential 10-12 million people in state capitals and major regional centres, the company has a further 30 sites under consideration.

According to CEO Andrew Peter Thompson, the broadcasting industry as a whole is undergoing structural change, moving away from a carriage and content scenario under the full control of the broadcaster to a multiplex infrastructure controlled by a third party with the broadcasters being content providers.

"The conversion model, which I would suggest, will probably based more on the English system of a multiplex owner," he said. "Legislation would support a digital multiplex licence, the holder of which would obviously have some constraints or obligations attached to it. Obligations such as fairness for access, minimum bit-rate guarantees, affordability and, perhaps, reach.

"Licences attached to the broadcasters



in this environment are sound programme service licences which enable content to be provided to the muliplex with digital additional services licences allowing non-programme associated data to be supplied as well at some form of constrained level."

As far as technical standard, Thompson also is also inclined toward the Eureka 147 scheme.

"It is, in my view at least, the only real choice for Australia as a primary platform for digital broadcasting," he said. "It is a mature technology. It is, more importantly, an established international standard.

"But, we've got to remember why we're doing it and that's the consumer that will benefit from this, hopefully. The unique selling point must be content. Content is king, but we can't just produce the same as we're producing on analogue onto digital. That's not a driving force for the take-up of the technology."

→ HIGH POWER DAB

Unveiled at this year's IBC, Rohde & Schwarz NA7000 family of high-power DAB transmitters come with an output power of up to 3.6 kW and use a new cooling concept. The employed liquid cooling system takes up only half the space of a conventional air-cooling system.

In addition, several transmitters of identical type can be operated with only one cooling system, reducing costs and maintenance.

The DAB transmitters of the R&S NA7000 family have an output power of between 0.9 kW and 3.6 kW, as required. Basic components such as amplifiers, power supplies, racks and the cooling system are identical to those used in the digital TV transmitters from Rohde & Schwarz. This uniformity of components speeds up maintenance and service and ensures attractive prices. There is the potential for simultaneous use of TV and audio broadcasting transmitters at the same site: Owing to the identical design, several transmitters can be operated with only one cooling system. To make the transmitters fail-safe, the DAB transmitters and the cooling system are highly redundant. If failures occur, operation is maintained by an identical spare component.

Reach Rohde & Schwarz in Australia on +61-(0)2-8845 4100, and in Singapore on +65-6846 1872.

→ FM/DAB OUTPUT PROCESSOR

Omnia Audio has stepped up with a new processor for FM broadcasters, the Omnia-6EX featuring parallel processing paths optimised for conventional FM audio and digital transmission chains.

The Omnia-6EX's parallel processing structure routes audio from the mixer section to output stages for conventional FM and DAB. The FM section receives distortion-controlled final limiting with pre-emphasis, and an upper-frequency response of 15 kHz. The DAB section has a multi-band Look-Ahead final limiter with user-selectable frequency response all the way up to the full audio bandwidth of 20 kHz.

Advanced features include:

* Processing algorithms for solo voices and instruments.
* Bass Management controls with two new Bass Limiter functions, "Tight" and "Girth", which give users fine control over low frequency processing.
* New Bass Limiter algorithms which change waveform characteristics based upon frequency.
* 25 factory format-specific presets help users get up and running quickly.
* Input Failsafe feature which automatically selects a new audio input source if the primary source fails.
* Linux-based front panel software provides smooth real-time metering of audio processes as well as encrypted password protection.
* Network Time Protocol function.

Omnia is represented in Australia by Comsyst. Reach them on +61-(0)2-9488 4888.

→ DAB BROADCAST STARTER KIT

Providing an impetus to gear up for digital radio, Harris Corporation has introduced the DAB Broadcast Starter Kit. It's an all-in-one solution that includes a pre-configured DAB transmission chain, and a training package to evaluate the wide range of DAB applications in order to prepare for the DAB deployment and to create a DAB business plan.

The package also features the DAB equipment that a broadcaster will need for a DAB operational broadcast. Only security and redundant equipment remain to be added at a later date.

The basic Harris Starter Kit for DAB broadcasting includes one audio encoder, one data inserter (PAD, N-PAD and SI) and one ensemble multiplexer. However, this DAB kit is flexible enough to allow operators to create their own configurations - audio only, audio and basic data or audio and enhanced data with additional testing, including a low-power transmitter. Additional modules may be used to complete the radio service content.

The starter kit is factory configured to enable broadcasting of DAB programming as soon as the equipment is received, without knowledge of DAB requirements or equipment experience. The starter kit includes a two-day training session on DAB technology, as well as on the equipment usage, to enable the engineering staff to implement DAB service applications.

Harris represented in Australia by Broadcast Services Australia (BSA). Reach them on +61-(0)2-9935 5900. www.bsa.com.au

TV Loudness: Time for a New Approach?

In this edited version of his paper presented at the recent AES Convention, John Couling, of Dolby Laboratories (UK), looks at the problem of subjective loudness on television.

IN ANALOGUE broadcasting differences in loudness levels between TV programmes and channels have often been a cause of public annoyance. With the move to digital broadcasting one might expect these problems to be solved, but this doesn't seem to be happening. In fact, with the larger dynamic range available in digital broadcast, the problem is getting worse.

Broadcasters usually rely on peak program meter (PPM) or volume unit (VU) measurements to normalize material, but neither of these account for how loud the material will be perceived by the listener at home. Rather, they indicate absolute signal levels, whereas humans use a very different long-term method to assess loudness. The listener's perception is based on factors such as the frequency response of the ear and the average level of the signal, not the peaks. When assessing loudness, the dialogue portions of the signal are particularly important - listeners will adjust their volume control so that they can understand the dialogue clearly.

Absolute measurements are, of course, still essential in order to calibrate reference level within a station to ensure correct gain structure and to measure peaks to avoid clipping and distortion. Any measurement of loudness should therefore be used in conjunction with a measurement of the true peak level, (both PPMs and VU meters under-read true peak value due to meter ballistics).

CURRENT PRACTICE

Current broadcasting practice is to use a combination of 'dynamic range compression' and 'peak alignment'.

In analogue television broadcasting, standard practice has been to drive programme peaks close to maximum modulation because of the limited signal-to-noise performance of the analogue transmission medium. This has lead to a practice where programs levels are aligned based on the peak level, as read by the PPM or VU meter chosen by that facility.

As it is essential that you do not exceed the peak (leading to overmodulation), heavy audio compression processing is often used. The result is to give all programming a similar, restricted dynamic range, with very limited headroom above the speech peaks. These two techniques, reducing the dynamics and aligning peaks, do roughly align loudness levels, as when the dynamic range is small, and controlled, aligning the peaks will give an approximate alignment of the average program loudness.

However, as studies have shown, there are still large discrepancies between the subjective loudness levels of different TV channels and programmes.

These discrepancies are often attributed to recent developments in compressor technology, which have enabled programme producers to drive the average level of some material (often commercials) closer and closer to its peak level. As a result some program makers are now able to reduce program dynamics by a much greater amount than is possible or desirable for other programming. For example a promo or commercial can be compressed so that the peak and average loudness are only a few dB apart; doing the same to a drama or film program can result in unpleasant compressor artefacts or a loss of artistic intent. As a result these two signal types are no longer compressed to the same dynamic range and so when aligned by the peak level the average loudness is no longer consistent.

Variations in loudness levels are compounded by numerous other factors. These include differences in the line-up levels used over a wide selection of content, the reliance on less operators and more automation, the variety of metering standards in use and the variety of transmission media in use.

LOUDNESS IN THE CINEMA

Several years ago, people started complaining about loud replay levels in cinemas, particularly during the advertising shown before the main feature. As a result, many cinema operators turned down their systems, sometimes by as much as 10 dB. Of course, knowing that the cinema sound system was often turned down, some mixers tended to compensate and mix their ads a little louder. The situation began to spiral out of control, with cinema owners reducing levels yet further, and mixers compensating by mixing louder and louder ads.

A typical early solution was to use peak level alignment when mastering the content. However, differences in the meters used often caused costly rejections and confusion. Furthermore, simple peak reading does little to quantify perceived loudness or annoyance to the listener. Note that peak reading is an even less appropriate measurement for use with multichannel sound. For these reasons, Dolby Laboratories worked with the film industry, advertising associations, and standards organisations to set up a

loudness measurement standard for cinema advertising. The measure chosen was Leq(m), a long-term average that correlates more closely with subjective impressions.

Dolby realised that the key to making this new standard practical and successful was to introduce a simple but effective meter specifically designed for use in film mixing studios. The Dolby meter has been joined by models from other manufacturers, and the Leq(m) scale has quickly become a worldwide standard for sound-level measurement of cinema commercials and film trailers.

LOUDNESS IN BROADCAST

So how can we start to address these problems in broadcast applications? The answer depends on finding a practical method to assess the loudness of material in a broadcast environment and using this measurement to align programme levels.

Many different methods have been tried over the years to calculate how loud a human will assess a signal to be. Early analogue solutions used filters to mimic the frequency response of human ears. The most proven of these being the A-weighting curve, as used in acoustic measurement, which models the frequency response of the ear at conversational sound pressure levels. But these were not adopted in broadcast due to their expense at the time, and PPMs and VUs still do not utilize any frequency response curve.

More recent techniques of varying complexity have been proposed, based on models of the human ear. These techniques tend to be computationally expensive and unrealistic for real-time use in a broadcast environment.

In experiments Dolby found that the variation in measurement accuracy between the simplest and the most complex loudness measurement systems is actually quite small, especially when compared with the variation of each listener. The LeqA measurement method algorithm has been standardised and used for some time as an acoustical measurement tool. It performs a long-term A weighted summation which produces results, in real-time, based on achievable, cost effective processing. It therefore provides a solid basis for a broadcast loudness measurement algorithm. Importantly the basic measurement accuracy is within the tolerance of the average listener.

There is an important difference between the LeqA and Leq(m) weighting curves that should be noted. The A-weighting curve corresponds to the frequency response of the human ear at normal conversational levels, like those experienced at home. This makes it ideal for assessing perceived loudness and intelligibility. The m-weighting curve, applied by the film industry, is designed specifically to asses film programming at cinema playback levels focussing on how annoying a signal is(1).

<< <<
DOLBY'S LM100
BROADCAST LOUDNESS METER.

An LeqA based measurement therefore meets all of the requirements for broadcast loudness measurement. Results are repeatable, the measurement output is a single figure which cannot be interpreted differently be different operators, and the measurement can be performed in real-time without excessive expense. By combining a machine that can measure this with one that measures true peak, that is, with no lag time, the problem of broadcast loudness variation could be solved for analogue and digital broadcasts alike.

In the US, LeqA has already been standardised as a broadcast measurement method in ATSC standard A54(2). The measurement is already being used by broadcasters preparing content for Dolby Digital transmission.

DIALOGUE INTELLIGENCE

In order to measure loudness accurately it is necessary to always measure the correct portion of a signal. For example, when watching television, a viewer will adjust the volume so that spoken dialogue is clearly audible and at a realistic, conversational level. They will not adjust the volume upwards during a quite section of a programme where there is no dialogue, and they are unlikely to adjust it downwards following a short impulsive noise, for example a gunshot.

Therefore, once the measurement algorithm has been selected it is essential to develop a method to decide when to apply that measurement. Previously the choice of when to measure (or when to read the measurement value) has been a decision for the operator. A method which automatically identifies when to measure would dramatically improve measurement quality.

In order to recreate the home listeners' behaviour, Dolby introduced the concept of Dialogue Intelligence. Dialogue Intelligence is a function that allows a loudness meter to control its measurement based on dialogue, to give even more accurate and reliable results. It allows a meter to recognise the same dialogue portions of a signal that a human listener would use when setting playback volume, and use that knowledge to choose when to take a measurement.

DOLBY LM100 BROADCAST LOUDNESS METER

The Dolby LM100 Broadcast Loudness Meter is the first stand-alone product capable of measuring the subjective loudness of programming and just as importantly, presenting the results in an easy-to-understand numerical format. The meter combines an algorithm based on the LeqA measurement with key improvements such as modes for both pre-recorded and live broadcast use as well as Dialogue Intelligence. The outcome is a simple measurement that can be used to adjust different content or channels to similar levels, on either analogue or digital TV services.

If used by broadcasters during ingest and quality control the LM100 would make it possible to conform all material for storage at the same perceived loudness level. When played-out all content would therefore be at the same, station approved, loudness level. Outsourced material could easily be measured and conformed to a specified value before being sent to the station.

Multiple service satellite or cable operators could use the meter to measure the different loudness levels of individual channels within their services. The meter can provide further user benefits through the addition of a range of user configurable alarms and extensive logging functions. These can provide information on a loudness history which can be used to analyse the source of loudness complaints or to understand the results of current practices.

CONCLUSION

Loudness problems compromise how entertaining broadcast sound can be in the home. It is natural to assume that digital technologies offer some improvement; however, this has been shown not to be the case as the variations in loudness are often

CONTINUED ON PAGE 48

→ FAIRLIGHT'S DREAM RUN

"As our industry continues to be bombarded by lower quality, cookie-cutter technologies, Fairlight customers will be readily apparent by the quality of their sound and the health of their businesses."

That was the word from John Lancken, CEO of Fairlight, Australia's original digital audio brand, on the eve of 115th AES Convention in New York which saw the reinvigorated company showcasing a new range of scalable, interoperable digital audio systems.

Heading the pack are new versions of its QDC operating software and DREAM Series user interface software that support larger configurations of the DREAM Series audio recording, editing and mixing technologies and MediaLink Audio Network Server. The new software also provides an enhanced Graphical User Interface (GUI) and additional automation features.

Also new is the Fairlight StationPLUS, an integrated mixer and editor that doubles the capacity of the Fairlight Station that was introduced two years ago. Fairlight StationPLUS sets gives existing Fairlight Station customers an economic upgrade route to enhanced functionality and additional capacity.

Visually dramatic is the new Fairlight DREAM Constellation large format mixing console with high-end automation and processing and an integrated 48-track disk recorder and editor.

Also new is the Fairlight Softmix PC-based mixing control application that transforms Fairlight Merlin and MFX3.48 digital audio workstations into fully fledged surround-capable mixing systems with track-based dynamics and equalisation and support for the company's Plug-Ins Manager 5. Fairlight SoftMix can remove the need for an external mixer completely and where one is already in place, provides plug-ins, routing and sub mixing capability to increase the speed and flexibility of the workflow environment.

According to Fairlight CEO John Lancken, each new product is engineered to operate as a highly functional, standalone unit or as part of an integrated network to facilitate more efficient workflows.

Fairlight's Australasian enquiries are handled by GBG Technology. Reach Graeme Rothwell on +61-(0)2-9401 9845.

→ EUPHONIX TAKES NEW ROUTE

StudioHub is a new standalone facility digital audio patching system available from Euphonix which features 12 x 12 MADI Ports and 768 x 768 Time Slots.

Both System 5 and Max Air can use a Euphonix StudioHub to route digital signals and MADI connections within the consoles. Outside digital and analog sources connect to the consoles via MADI. Euphonix also produces a complete range of multi-channel analog/digital converters and format converters.

The I/O converters, the StudioHub router and a Patching application can be purchased separately to create a powerful standalone facility-wide routing and patching solution. Standard MADI can be run up to 100M using high-grade coaxial cable, and for extended cable runs over 100m the Euphonix FiberTran system extends MADI up to 1.5km using fiber.

A new PCI MADI card from RME allows DAWs to connect simply and inexpensively to the routing system - a single coax can carry 56 channels of digital audio direct from the PC's PCI card into the StudioHub router for a fraction of the cost of currently available I/O systems. Each of the RME Hammerfall HDSP MADI cards includes a single MADI in and out coax connection - perfect for connecting DAW systems such as Nuendo to the StudioHub router.

The easy-to-use PC based Patching software application, provides the operator complete control of routing. In addition, the Euphonix StudioHub can also support control from industry standard Thompson/GVC VM3000 Jupiter compatible broadcast routers making this a truly flexible and expandable facility solution for broadcast, audio-post, live or music.

Reach Technical Audio Group (TAG) in Australia on +61-(0)2-9519 0900, or in New Zealand on +64-(0)9-416 0190.

→ SURROUND SOUND PLUGS IN

Launched at the recent AES Show in New York was SRS Labs Circle Surround VST Pro software, a VST plug-in for the encoding of 6.1 channels of surround sound.

The software is designed for any surround-capable, VST-compliant host application for Mac OSX and Windows XP supported computers. As well as encoding software, the product also includes a decoding plug-in, which is used for monitoring playback during production.

It allows encoding of up to 6.1 channels of surround sound into stereo delivery formats for television, cable programming, music applications, and other media. In the words of SRS Labs, "This software represents a substantial breakthrough over previous matrix encoding plug-ins in that it is the only encoder capable of encoding up to 6.1 channels while providing accurately steered, full-bandwidth stereo surround channels with superior center channel dialog isolation. In addition to broadcasting and post production, this new surround encoding tool is well suited for production of 5.1 or 6.1 music content with delivery via industry standard compact discs."

For more, visit www.srslabs.com

→ SOUND FORGE ON WITH SONY PICTURES DIGITAL

In July, they bought the company. Now, the product releases continue. Following the Sony Pictures Digital purchase of Sonic Foundry's desktop software products and related assets for US$19 million cash, version 7.0 of Sound Forge digital audio editing, recording and mastering software is now shipping.

Available in boxed and downloadable configurations, the new version comes with features such as: DirectX Plug-in effects automation; automated time-based recording; audio threshold record triggering; VU meters for recording and playback; enhanced Spectrum Analysis tools; White, Pink, and Brown noise generators; Media Explorer Previewing; Project File Creation; and support for 24fps native DV video files. You can find more details at the company website, www.sony.com/mediasoftware

The MSRP for Sound Forge 7.0 software is AUD$669. Registered users can upgrade directly from New Magic Australia www.newmagic.com.au. For a limited time the software ships with Sony CD Architect 5.0 free.

Reach New Magic Australia on 02 9528 4555. Email: sales@newmagic.com.au

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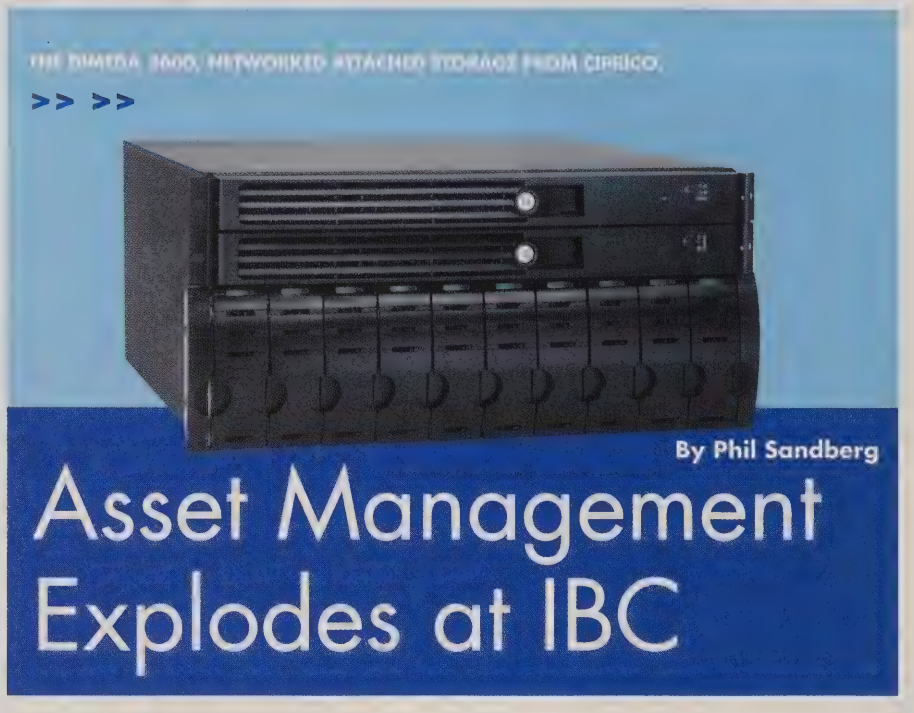

By Phil Sandberg

Asset Management Explodes at IBC

NO-ONE can deny the inherent lack of "sexiness", but if the number of systems on show at this year's IBC is any indication, 2004 is set to be a watershed year for the evolving field of digital asset management.

Heading the pack in Amsterdam was the DG INFSO (the Directorate-General Information Society) of the European Commission which supported two exhibits of R&D projects, Adopt.IT and IST Village.

The Adopt.IT booth showed live demos of media access networks, multimedia content management technologies and interactive TV. Adopt.IT is a 2-year European dissemination project aimed at promoting good practices in the area of multimedia content and tools.

Projects hosted on the Adopt.IT booth included:

* WEDELMUSIC (WEb DELivering of MUSIC), a system that allows users to prepare performances, to study and analyze music, and distribute music in an interactive way. The system supports audio, symbolic and image formats in an integrated way, obtained by defining a new unified coding scheme for audio, images and symbols.

* C.IM.WO.S. (COMBINED IMAGE and WORD SPOTTING), a project aimed at facilitating common procedures of archiving and retrieval of audio-visual material.

* BUSMAN (Bringing User Satisfaction To Media Access Networks) designs, implements, validates and evaluates an efficient and secure system for the delivery and querying of video from large databases.

The IST Village (Information Society Technologies Village) booth presented a joint demonstration of seven projects. The projects ASSET, ICE-CREAM, MOSES, MUFFINS, SPATION, Share it!, and FUTUREHOME) demonstrated concepts for sharing content among domestic users. For more, visit www.adopt-it.info

Among the more market-ready solutions promoted in Amsterdam was a partnership between Discreet and SGI to deliver SGI InfiniteStructure SAN systems for film mastering and video production. SGI formally joined Discreet's infrastructure sparks partner program in August and, as part of the agreement, Discreet and SGI are qualifying key elements of the SGI InfiniteStructure solution, including the SGI SAN Server family and SGI CXFSTM shared file system, to work with Discreet's systems and software product lines.

The SGI CXFS shared filesystem will allow users to have only one copy of their content share access to it from any platform. The SGI filesystem will allow access to data from IRIX, Windows, Linux, and Mac hosts as though it were on local storage. The SGI CXFS file system provides the potential to store up to 18 exabytes (18 million terabytes) of data, the equivalent of over 9 million high-resolution 2K feature films, while the SAN can be configured to provide as much as 12GB-per-second aggregate bandwidth, the equivalent of 32 10-bit 2K film data streams. Visit www.discreet.com

Envivio and Sanbolic announced an MPEG-4 system designed for broadcasters. The Envivio MPEG-4 system consists of 4Caster real time encoders, 4Coder offline encoders, 4Sight streaming servers and the 4Manager control system, along with shared storage formatted with the Sanbolic Melio FS file system, at the headend. The Melio FS system allows multiple, simultaneous users to access the same files at high speed. The scalable system can consist of two 4Sight systems to a server farm that streams to tens of thousands of users. Visit www.envivio.com

Ciprico showcased its DiMeda Network Attached Storage (NAS) solutions. Designed for ingest, non-linear editing, archiving, and broadcast-to-air applications, the DiMeda 3600 allows multiple clients to conduct real-time file sharing at near-wire speeds between Windows, Mac, and UNIX clients. Also on show, the DiMeda 1700 serial ATA drive technology with Ciprico's embedded software layer to deliver real-time performance and fault-tolerance at a low-entry point. It is suitable for most video editing applications.

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DAM PROGRAM FOR NAB2004

ACKNOWLEDGING the growing interest in Digital Asset Management, the US National Association of Broadcasters has announced a DAM conference stream and pavilion for its 2004 convention. Playing a central role in shaping the program and exhibits will be the recently formed Global Society for Asset Management (G-SAM).

Richard Ehrlich, founder and executive director of G-SAM, will serve as chair of the conference advisory council. The sessions will focus on issues facing digital asset management, including metadata standards, intellectual property rights management, justifying costs, security, archiving, new revenue models and managing expectations and growth.

According to Ehrlich, the DAM exhibition pavilion will provide a central forum at NAB for leading experts from the DAM, storage and security markets to present educational sessions that showcase global best practices.

NAB2004 will take place April 17 - 22, 2004 in the Las Vegas Exhibition (open April 19).

Web sites: www.dam.conference.com; www.nab.org; www.g-sam.org

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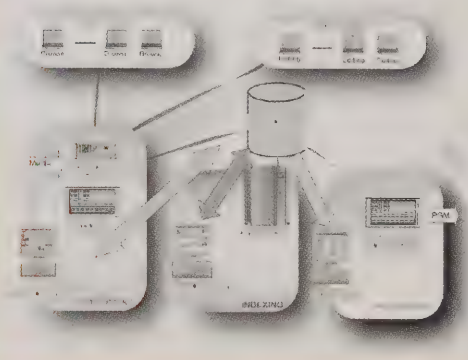

By Perry Weinstein*

SO, WHAT'S ASSET MANAGEMENT ANYWAY?

THE INDUSTRY has been talking excitedly about Media Asset Management for a while, but there's a lot of confusion among broadcasters fuelled by messages from suppliers, and marketing hyperbole. As an industry saddled with more acronyms than actual words, the launch of Asset Management technologies have further muddied the water. Many convoluted descriptions intended to brand this solution set proliferate; for example, descriptors include: Digital Asset Management (DAM), Media Asset Management (MAM), Video Content Management (VCM), or Digital Content Management (DCM) - just to name a few! The net result is a marketplace having to invest valuable time in the quest to understand exactly what Asset Management is or can offer them.

Standardising on intuitive terminology would help resolve some of these issues. This, though, may be an unattainable goal as Asset Management is inherently hard to define.

The industry agrees on the fundamental "what" of Asset Management, which includes a variety of functionalities enabling broadcasters to:

* Ingest, catalog and store media digitally by metadata values
* Research and edit metadata for better indexing of media content
* Browse and select media for retrieval
* Trim, time and edit media, and
* Transfer the media where and when it's needed.

Put simply, MAM takes broadcasters a step beyond anything they've been able to do before. All departments in a broadcast facility will have access to programming, commercials and playlists at their fingertips. They will be able to accelerate the production process; repurpose content more quickly, easily and cheaply; react faster to things such as commercial changes and be able to pull up information for content providers and advertisers in an instant.

Asset Management isn't a single product but rather a collection of wide-ranging applications that, when fully integrated, become an interconnected system to manage media and content. Most offerings include a collection of five to fifteen different products comprising a total solution-not including integration to legacy-systems. Therefore, it stands to reason the terminology will remain broad and all-encompassing.

IN THE END, IT'S ALL ABOUT BUSINESS

At this time, the broadcast industry is not especially receptive to sales pitches calling for new capital investment. Global business conditions have slowed capital investments in new equipment, regardless of inherent value. Therefore, even before new technologies are evaluated, there is a fundamental question asked: does it help the business make or save money? We all have something very basic in common - the need for our respective businesses to make a profit.

Therefore, customers begin meetings with one of the following two questions:

* How can Asset Management help me lower my cost of doing business?
* How can Asset Management expand my business without increasing or only marginally increasing my overhead?
* From the first Asset Management installations, though, we've learned that these business goals and ROI are achievable with asset management systems. But, how each solution achieved these goals is different.

Describing the how in regards to the why seems to have stumped the industry - and rightly so. The features and functionality, let alone the technologies utilised, vary widely.

This is to be expected, though, in the first phase of adoption in any new market. In any technology transition, the first installations are large, complex, customized projects for customers interested in a completely new solution. The projects have had large scopes, bigger budgets, and many revisions to finally provide a working solution. These pioneers are early innovators who are not risk adverse to new methods of working or achieving business results; inevitably they have built a solid set of best practices from hard lessons learned.

Based on these lessons, vendors such as Harris have been able to develop offerings proclaiming stable, standardised, and modular platforms solutions. According to Kane Consulting, a European-based DAM consulting and research firm, this provided the momentum for the industry to move

into the second phase of implementation this year. Before then, products were more prototypes and experiments. Now, they are market and field-proven solutions for the broadcast and rich media industries.

EMERGING MODELS

As this new phase of industry adoption has evolved, three key models within the broadcast industry have surfaced as the most active segments in this phase of implementation: playout, news production, and archival management and distribution. The value proposition stays the same, but the feature sets vary based on the broadcast environments implementing asset management systems.

The most common of these three are playout centers-distribution and transmission operations requiring the right media in the right format at the right time. To accomplish this, a focused set of functionality is required. First, playout centers require the ability to digitally ingest media as well as manage this media through efficient storage, archival, tracking and retrieval processes. All media must be managed in a format independent environment, across multiple platforms and automatically delivered on time to the proper destination. Therefore, systems have been optimised for real-time

"Asset Management provides functionality reducing the time required to develop and produce quality news content, directly impacting a broadcaster's bottom line."

intelligent management and distribution of media; for this broadcaster, it's all about creating a more efficient up-front process within the operational environment. This provides a strategic competitive advantage through speed and reduced costs in the facility. The cost savings can be pocketed or used to fund new programming streams or services without additional costs.

Intelligent management of media cannot be limited to the playout centre's technical core. Desktop access provides content and media throughout the facility, enabling more efficient cross-departmental communication. In the past, staff members had to physically go to the technical center or request a costly dub, just to view media. With Asset Management systems, previews of such material can be readily accessed throughout the enterprise, thereby improving collaboration, decision-making and decreasing overhead.

For most broadcasters, the stakes are usually higher within a news production department; therefore, asset management solutions provide immediate benefits. A major industry trend accelerating adoption is the proliferation of server-based editing in newsroom environments. As broadcasters have transitioned to all-digital news facilities, the storage of news assets has quickly led to the question: now, how do we store these for long term use? The logical next step is implementing a solution providing easy access and retrieval of media.

Asset Management provides functionality reducing the time required to develop and produce quality news content, directly impacting a broadcaster's bottom line. Such solutions must efficiently log incoming news feeds, including live and/or automated indexing of this material. Accessibility of new media at the point of best use is critical, as more and more journalists are responsible for editing final product. Therefore, being able to view and make editorial decisions at any point in the collaborative process directly impacts the quality of the product, cost of production, and time-to-air. These benefits can improve competitive advantage, and result in an increase in viewership. Any incremental increase in news ratings generally results in substantial returns to the bottom line.

Of course, the ability to file and find media later-called a deep archive-is essential to the success of both playout and news operations. It is assumed the asset management systems provide this as an integrated feature. What's interesting, though, is this functionality is emerging as a stand-alone offering.

Sports teams, governmental bodies, corporations, and educational institutions have consistently utilised rich media libraries. Sophisticated Asset Management tools simplify this highly manual process; currently, assets are hidden in deep archives, only accessible with a librarian's assistance. But, second generation asset management systems automate such workflows, creating a system that can be used by more than "expert" users. The net result is media can be quickly found and immediately repurposed, thus generating revenue, saving time, and decreasing user frustrations.

With any of the above models, the solutions require adaptability to unique business processes with standardised offerings. It is assumed customers will need some level of configurability in the Asset Management system; the chief enabler for this is Workflow Management tools. These standardised tools provide user-specific configurations for each individual operation; in other words, it is a custom solution without custom code that is both highly modular and supportable.

Workflow Management tools supplement second generation Asset Management solutions. The bottom line is that normal operations are almost completely automated, and system exceptions notify highly skilled operators to manage potential problems versus routine tasks.

THE MARKET IS READY

Clearly we are now entering the era of second generation of DAM systems. The pioneers of the first generation struggled with the proprietary databases, costly customised interfaces to legacy systems, and the disappointment of multi-million dollar investments failing to fully achieve their ambitious ROI targets. We owe a debt of gratitude to these early adopters but more importantly we must learn from the past and avoid the pitfalls of those large and overly ambitious investments.

The next generations of systems designed for targeted applications with a clearly achievable ROI, are a now available. Risks are significantly lowered by employing best practice models, and using modular components that can be easily modified or replaced. Systems interfaces based on the business-to-business technology developed in the dot.com era make it possible to design DAM systems that integrate best-in-class products from multiple vendors. Additionally, standardised data models have emerged. They ease the migration path where systems must be upgraded or expanded with new technologies.

There has never been a better time to deploy a DAM solution, and start enjoying the clear productivity gains increasing the value and profitability of your business.

**Perry Weinstein is manager, asset management business development, for Harris Automation Solutions.*

HARDCORE STORAGE

WITH successful installations at Foxtel and now Southern Cross Broadcasting, US tape library developer Spectralogic has shown its systems can meet the demands of the hard-nosed broadcast environment.

Along with local distributor Techel, the company demonstrated a number of libraries at the recent Storage World Conference held in Sydney.

The T-Series tape libraries range in capacity from 1.5Tb for small post-production applications to 64Tb (the capacity installed at Foxtel).

At the heart of the system is the Terapack. Instead of the traditional method of loading, unloading and managing tape one at a time, TeraPacks manage and move media in groups. The company claims the simplified media management system offers nearly a ten-fold time savings over existing libraries.

TeraPacks are removable and self-contained for easy media handling and stacking, come standard with bar code labels for local and off-site media management, allow mixed media with 9 SDLT tapes, 10 SAIT and 10 LTO tapes, or 12 AIT-4 tapes per pack.

Reach Techel on +61 (0)2 9906 1488, www.techel.com.au; www.spectralogic.com

CONTINUED FROM PAGE 34

The company has also recently released the Talon range of 2Gb/second storage featuring removable Terabyte disk pack. With data delivery of up to 325 MB/second per system, Talon has been designed for commercial and military Command and Control (C4ISR) applications, including video capture and analysis, database/application deployment, broadcast trucks, ground stations, or surveillance aircraft. Talon 2211 has a single disk pack with which an entire data set (up to 1.1 TB) can be removed and/or replaced in seconds. www.ciprico.com

OmniBus Systems announced a strategic partnership with SeaChange. A new interface between SeaChange's family of broadcast servers and OmniBus' automation suite has been designed to provide distributed control of SeaChange's Broadcast MediaLibrary storage system. With simple user interfaces, the combined system makes routing video files through entire facilities to transmission more efficient. www.omnibus.tv

Singapore-based Vidtools demonstrated its web-based Vidtools Media-Management Suite (VMS), designed as an enterprise media asset system. Based around the MPEG4 standard, the system can be used to capture, encode, index, search/retrieve, edit and distribute video and other content assets with access a web browser. A robust indexing engine reads metadata from XML. Varying levels of user access can be assigned while a Keyframe Slider Bar provides image-based preview before video playback. www.vidtools.com

EMC's Avalon Product Division announced new features for its AVALONidm intelligent data management solution. Version 2.6 includes an enhanced file system interface, in addition to the product's open API to allow users more flexibility in storing data. The interface allows users to store data via standard NFS or CIFS mounted file systems. Also new is Console, a GUI deisgned for ease in controlling an entire data storage management system, and WAN Manager which allows files to be transferred automatically anywhere over a network. Storage management support has been extended to EMC's CLARiiON with ATA System which integrates ATA and Fibre Channel disk drives, as well as the Centera Content Management solution. www.emc.com

Encoda Systems announced a solution for ingest and metadata management, DALingest, that combines Encoda's satellite record and ingest automation into a single, powerful media ingest automation tool and adds a new optional database, DALdb, for tracking and storage of material metadata.

DALingest provides schedule-based, frame-accurate dubbing of new material onto video servers, manages the compilation and transfer of taped material, and records live incoming feeds. The solution has a new Windows-based graphical user interface and operates on its own computer or dual-redundant CPUs with Encoda's automation systems. Encoda DALdb is built on Microsoft SQL and is a metadata repository for data shared between automation, traffic and future partners.

DALdb is suited to multi-station facilities allowing different channels to access a single material database. www.encodasystems.com

Encoda is also part of a combined digital content archive solution with partners StorageTek, Front Porch Digital, Arkemedia Technologies and Leitch. The system allows for non-disruptive growth. All applications share the same metadata to access on-air and objects management within the digital content archive. Material is ingested to and distributed from Leitch broadcast video servers. Stored in a variety of low and high bitrates in StorageTek's Digital Content archive, the material is serviced to and from the Leitch servers via Encoda and also via Front Porch Digital's DIV Archive enabler. The entire solution is scalable to more than 7.8 million hours at Mbs. www.storagetek.com

"Singapore-based Vidtools demonstrated its web-based Vidtools Media-Management Suite (VMS), designed as an enterprise media asset system."

Content is a broadcaster's most valuable commodity and the ability to find and re-use media quickly and easily is priceless.

But if your media asset management operation is not fully integrated with other broadcast equipment, placing material in an archive can be an expensive way of sealing it away forever.

OmniBus Systems' award-winning G^3 technology seamlessly integrates a wide variety of broadcast processes to manage everything that happens to content from ingest to archive ... all from the journalist's desktop.

It's a powerful combination that unlocks the true value of all broadcast media.

OMNIBUS

G^3

www.omnibus.tv

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SOUTHERN CROSS: (L-R) ENCODA AUTOMATION, MASTER CONTROL, ENGINEERING MANAGER ROD GIDDY.

Television Central

It's the biggest centralisation project in the history of Australian TV. C+T examines Southern Cross Broadcasting's move to digital.

SOUTHERN CROSS Broadcasting takes programming from the metropolitan Network TEN for retransmission to 22 markets in Australia's Eastern States, inserting local commercials and content. The broadcaster also takes programming from the Seven Network and inserts local material into the Seven Central satellite service covering remote central Australia and Darwin.

The centralisation project began in March of 2002 with planning, design and equipment selection for a playout centre in the Australian capital, Canberra. The design evolved to encompass a 24-channel playout facility which would replace analogue playout in Canberra, as well as Townsville in Queensland, Coffs Harbour in New South Wales, and Bendigo in Victoria. The decision to centralise facilities in Canberra was based on geography, logistics and the fact Canberra was itself a large centre, but still close to Sydney.

According to Rod Giddy, SCB Engineering Manager, the Canberra facility was designed as an SDI plant with upgrade path for high definition. Australian Government legislation requires broadcasters to simulcast SD, HD and analogue transmissions. While these rules do not apply to non-capital city broadcasters until 2005, Southern Cross is already transmitting a significant amount of programming in standard definition, 16:9.

Given the timeframe involved and the downward trend in the pricing of HDTV technology, SCB has decided to allow itself time to assess potential paths to HD.

TVCs shown throughout the SCB network are typically made in facilities in the local markets. Acquisition is carried out in formats ranging from Betacam SP to Digital Betacam and material is edited on Pinnacle Systems' liquid silver platform.

The TVCs are edited using MPEG-2 I-frame at 50 Mb/sec on Pinnacle Systems' Liquid Blue or Liquid Silver editing platforms. The MPEG I-50 content is converted to long GOP MPEG and sent to Canberra via Wide Area Network in slower than real time to Masstech MassStore asset management system for long term storage on data tape. When required material is then transferred to Pinnacle playout servers. (See whitepaper, opposite).

SCB use four presentation pods as each state often wants to broadcast different live sporting events. Automation from Encoda Systems provides this functionality. In addition a key requirement provided by the Encoda Automation is the ability to produce different feeds at different times in a semi automatic fashion using a flexible alternate log allowing flexible live to air, a key component when ad breaks are not planned.

The system is Encoda's D series A7500, a real time multi-channel frame accurate system that uses open standards for the user interface (such as Windows) with Encoda's own kernel OS.

The proprietary nature of some hardware components allows for multi-channel, frame accuracy. The system also features hot standby redundancy. TVCs and other locally-produced content are 'wrapped' in Encoda's XML-based clip metadata format extending out through DAM and traffic.

"We perceived Encoda offered strong multi-channel, multi-market capabilities and was also cost-effective for multiple markets," says Rod Giddy. "We followed up with other users around the world. "As a result, we placed the order in July, 2002, and were testing before Christmas. We then committed nine markets to air in April, followed by the full 22 markets and two channels for redundancy."

According to Richard Hewitt, Encoda VP of Automation for Asia-Pacific, the SCB installation included a number of legacy systems in different locations, not unlike the TEN Network when it used the company's automation in its digitalisation process of the late '90s.

"It was a case of needing a system to which can still look like a regional transmission but from a central platform, keeping the look of each channel," said Hewitt.

"In terms of the business case, it's a natural saving in infrastructure. In terms of the Southern Cross installation in particular, it can be expanded at a later date to take in HD broadcasting. It's not a great headache. It's been built for expansion. It's just a matter of adding modules and updating software."

Advanced Editing & Content Management: Installed and Operating in Australia

Matt Klein* outlines how Pinnacle Systems' Palladium MPEG-2 architecture is applied to Southern Cross Broadcasting's centralisation project.

We have reached another landmark in the evolution of Australian broadcasting, where the concept of "video" has truly been replaced by "data". While this concept is not new, only recently have commercial broadcasters taken this technology all the way. Complete centralised broadcast Operations now deploy end-to-end systems that use MPEG-2 nonlinear editing, file transfer media exchange, near-line caching, archiving, asset management, multi-channel SD/HD SAN server playout, MPEG4 proxy creation and smart disaster recovery but never process the content as base band video.

Remote sites produce commercials or news content on MPEG-2 native editing systems and perform FTP content exchange over WAN's to centralised broadcast operations. The material handling system communicates with the remote facilities for content gathering and automatically archives the content. Metadata for each item is parsed to update databases and if necessary make it compatible with automation systems. Proxy copies of each item are created for reviewing and checking by the traffic department or others using off the shelf media players. Asset management automatically controls bi-directional file transfers between servers, intermediary cache and to one or many AIT3 tape libraries.

This paper will cover in detail how the local Pinnacle distributor, Techtel, brought together one such project at Southern Cross Broadcasting which has centralised Broadcast Operations in Canberra, Australia using Pinnacle Systems' MediaStream server as the play-to-air servers, remote commercial production on Pinnacle Liquid editing products, Massstech Group products for media management and media movement, Spectra Logic archival storage system, and ingest and play-to-air automation from Encoda Systems.

OVERALL SYSTEM IN BRIEF

The overall system consists of several important pieces that will be discussed in more detail in the following sections, but will be briefly described here. A simplified block diagram appears in figure 1.

As mentioned briefly in the introduction, the remote production sites get in raw commercial content, which is to be edited. This is the last time this content is interfaced as video until the output from the play-to-air server at the end of the process. Once an edited piece is completed, the operator will add certain metadata specific to the content, which is not directly contained in the edited piece itself. After the metadata is entered, this content is automatically sent to a local workstation. This local workstation acts as a staging area and also automatically converts the MPEG I-Frame into long GOP MPEG, which is appropriate for the play-to-air servers at the central site. Additionally, the content is bundled with the metadata.

At the central site a Masstech MassStore media management system watches the staging workstations at the remote sites for new content. When new content consisting of video, audio, and metadata is seen in the staging workstations, it is pulled across the WAN into a nearline cache server at the central site. When the content arrives in the cache server of the media management system, a proxy version is created.

Additionally, the metadata, which is used by the Masstech MassStore, is expanded into a form, which the automation system will also use later when the content and the automation specific metadata are on the video server. The video, audio, metadata, and proxy are also archived using a Spectra Logic AIT3 library. The system efficiently optimizes the use of the online server storage arrays via high-speed fibre channel connections. In addition to long term content storage, the library provides another level of backup in the unlikely event of a disaster.

The traffic system at the central site gets schedules, which determine what

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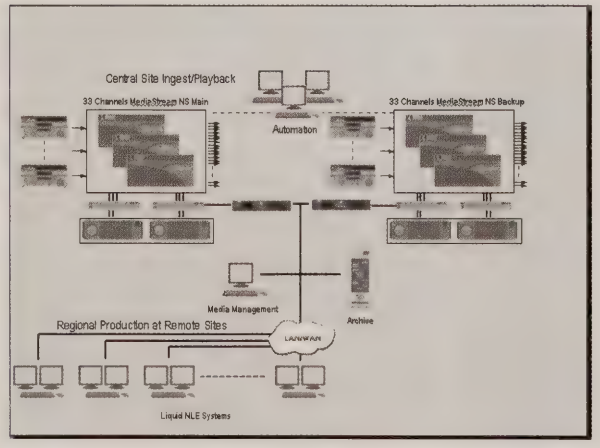
FIGURE 1 - SIMPLIFIED SYSTEM BLOCK DIAGRAM.



content is to be ingested and when content is to be played. Content can now be brought into the video servers. The content may come from several ingestion points. Some content is ingested and encoded at the central site under control of the automation system. The automation system then knows this content and it's database because it was ingested under its own control. This automation system now informs the MassStore system that it would like to transfer a copy to the nearline cache storage. The media management system then pulls the content and metadata and again creates a proxy of the audio and video. This content consisting of the video and audio, proxy, and metadata is then moved into the archival storage.

When content needs to be played out, the automation looks down the play lists in advance of the time when content needs to be played. The content being requested could have been previously ingested by the automation system into the Pinnacle video servers or it could have originated from the remote sites. In either case the automation system will make a request to the Masstech media management system to retrieve the content. The retrieved content is then transferred to the video servers and can now be played out according to the schedule.

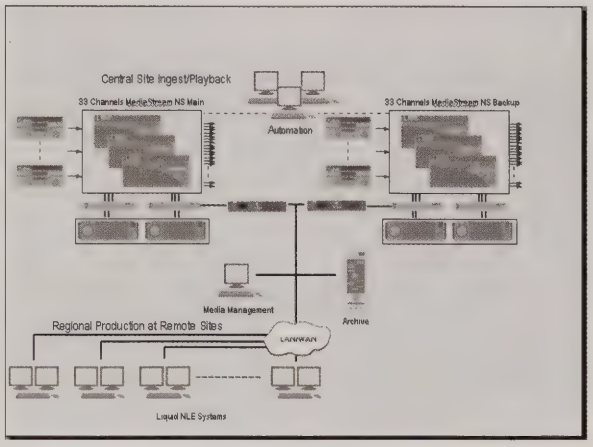


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FIGURE 2 -REMOTE SITE BLOCK DIAGRAM.

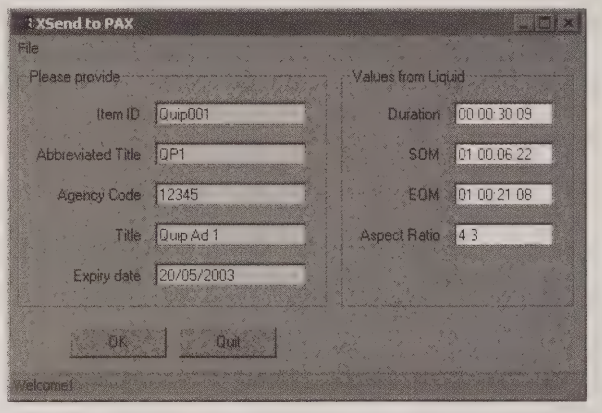

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FIGURE 3 - XSEND GUI ON LIQUID TO TRANSFER CONTENT TO PALLADIUM EXCHANGE

REMOTE SITE SYSTEMS FOR EDITING COMMERCIAL PRODUCTION

The Southern Cross Broadcasting group has greater than 20 sites geographically distributed. Each site acquires local footage and maintains high quality and consistency at each of the sites by encoding video content using MPEG-2 I-frame at 50 Mb/sec. This is done in a Pinnacle Systems' Liquid Blue or Liquid Silver editing system. The Liquid products support a range of full craft editing to quickly allow production of the commercial content. Graphics and effects are added as necessary and importantly a slate is also added to the material. Once content is completed the user will set the SOM and EOM markers on the actual time line of the piece. At this point the operator selects to XSend the content to Palladium Exchange.

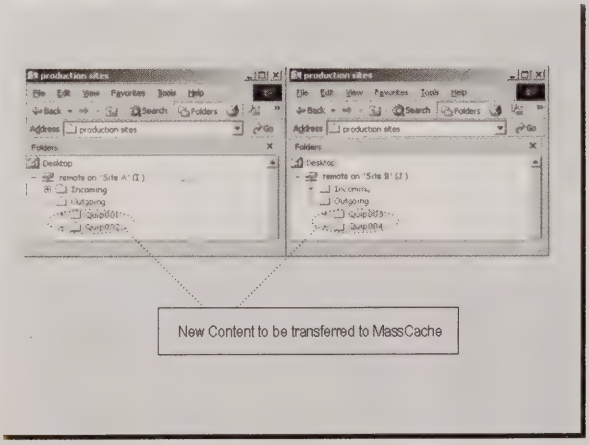

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FIGURE 4 - STYLIZED VIEW OF CONTENT MONITORING AT REMOTE SITES.

Palladium Exchange is another product from Pinnacle Systems, which is used to convert the MPEG I-50 content from the Pinnacles' Liquid editing systems into a long GOP MPEG, which is more appropriate for the play-to-air servers at the central site in Canberra. Figure 3 below shows the GUI used. Many of the fields such as SOM and EOM are populated automatically and the user will populate other fields. The inputs in the GUI are populating an underlying an XML template. Once the window is closed the video, audio and XML content are sent to a location in the local Palladium Exchange.

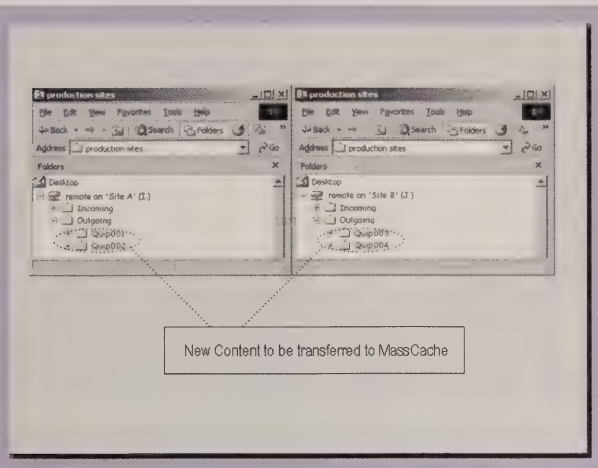

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FIGURE 5 - BASIC CENTRAL SITE INTERCONNECTIVITY.

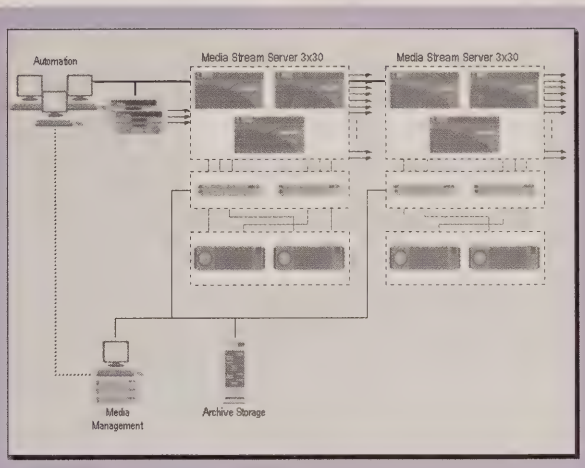

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FIGURE 6 - CENTRAL PLAY-TO-AIR SYSTEM.

FORMAT CONVERSION AND PALLADIUM EXCHANGE

As mentioned above Palladium Exchange is a conversion engine, which can among other things convert between I-frame and long GOP formats whether between Pinnacle products or between other companies' file formats and MediaStream format.

The Incoming directory in the Palladium Exchange is continuously monitored for newly arriving content and will automatically convert the new content from I-frame 50 Mb/sec and separate audio into long GOP MPEG at 15 Mb/sec with multiplexed audio which can be played out later on the MediaStream Servers at the Central Site. The converted content is placed into an Outgoing directory along with the XML file containing the metadata.

DIVIDE AND CONQUER APPROACH TO MEDIA COMPRESSION

One might wonder why each of the remote sites has its own conversion instead of sending all files to a central point for conversion. The system is designed with a 'divide and conquer' approach to conversion of I-frame content to long GOP and therefore the conversion task is distributed across the remote production sites which allows conversion horsepower to automatically scale with number of sites. Additionally, by compressing prior to transmission back to the Central Site, the network traffic is reduced by a factor of greater than 3 to 1 because the 50 Mb/sec I-frame content is taken down to below 15 Mb/sec long GOP. The workstation also acts as a "local" library holding the fused master and provides access to the media management central database for browsing. These factors are particularly important at the end of a week when there is a push to get commercials from the remote production sites to the central site to fulfill new airing schedules.

MEDIA MANAGEMENT & MEDIA MOVEMENT TO CENTRAL SITE

The MassStore media management from Masstech Group is used in order to accomplish the movement of material from the remote sites to the central site. The MassStore automatically polls an arbitrarily large number of remote or local locations of various types including video servers and directories on standard Windows PC in order to look for new content, see figure 4 below. Various polling rules are setup and functions of what to do with new content.

Once media exists in a completed form at one or more of the remote sites the content is moved over the wide area network into a large local disk cache, which is part of MassStore. In this local cache the proxy generation and metadata extraction occurs.

CENTRAL SITE SYSTEMS

As mentioned above content at the central site may be edited commercials from the remote sites or locally ingested long and short format programming or spots. Several important pieces exist at the central site in order to get media assets to air. Media management and media movement hold together the non-real time movement of content from remote production sites, archive, and the On-Air Pinnacle MediaStream servers.

CONTINUED ON PAGE 44

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MASSTECH ENGINEER LUIS LOPEZ CONFIGURES THE MASSSTORE ASSET MANAGEMENT SYSTEM. AT LEFT IS SPECTRA LOGIC'S 20K DATA LIBRARY.

(BOTTOM) TECHTEL ENGINEER JOHN NASH CONFIGURES THE PINNACLE MSS 900NS SERVER.

CONTENT MANAGEMENT AT CENTRAL SITE

Content management is used to automatically get assets from the Palladium Exchanges at the remote production sites. As mentioned earlier, this content is composed of the MPEG-2 long GOP audio/video file, a frame table, and metadata. Some of the metadata is the XML file containing all of the characteristics of the content: SOM, EOM, Title, etc. Once the content is at the central site, the media management capabilities of the MassStore system will create proxies and registers the metadata as well as created automation specific representations of the XML data.

All of the content associated with the single asset is now archived into a Spectra Logic 20K archive system. Full tracking of where in the archive content exists and status of the archive is maintained by the MassStore system. Upon requests from the Encoda automaton system, which controls the MediaStream servers, content is moved via MassStore from the archive system to On-Air Pinnacle MediaStream servers. A similar media movement and metadata and proxy creation task happens in reverse after new content is ingested into the MediaStream servers. This will be described a little later.

CENTRAL PLAY-TO-AIR SERVERS

The central play-to-air system is an important piece at the center of the total Southern Cross Broadcasting centralisation project because it is responsible for reliably ingesting and airing content day in and day out as well as interfacing with the media management and automation system. The system is constructed based on a highly reliable and fault tolerant core called the Palladium file system which manages the file system of Pinnacle's MediaStream server Networked Storage System.

The NSPOF storage system of the MediaStream Server consists of redundant fibre channel switches and connections to RAIDed storage, redundant RAID controllers in the storage arrays and redundant files system controllers, which the video I/O chassis communicate with. Each of the MediaStream servers systems at Southern Cross today has more than 30 video channels. Since greater than 20 regions of the Southern Cross Broadcasting rely on the MediaStream server system, which in and of itself is highly reliable and fault tolerant, two of the Networked Storage Systems are used for even greater fault tolerance. Figure 6 below shows the system.

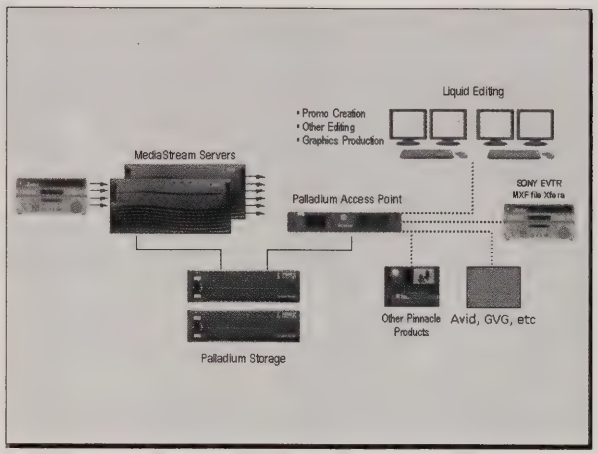

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FIGURE 7 - MXF INTEROPERABILITY AND NATIVE MXF SUPPORT.

The system was designed to be expandable in channel count and storage capacity. Additional I/O chassis and or storage can be added to each of the MediaStream Networked Storage Systems.

Further, the very system in place at Southern Cross can be expanded seamlessly to air HD content. The MediaStream Servers have supported both HD and SD cards in the same physical I/O chassis for several years. The timing is good because the Australian government is mandating that some HD content be broadcast starting in July of 2003. With the MediaStream Server, Southern Cross is well positioned to meet the HD challenge. Not all video servers are the same and the MSS900 SAN systems at Southern Cross in Canberra are already pre-equipped to be able to be expanded to over 100 channels. Additionally, Southern Cross has in place Pinnacle Systems Palladium Exchange gateways, which allow file transfers and conversions from non-Pinnacle servers like those used by the TVC (commercials) delivery company Dubsat. The MSS900 SAN systems also feature embedded audio I/O, Dolby-E and Dolby Digital capability, and can have cards added later for doing ASI I/O and high definition as mentioned above.

BROADCAST INDUSTRY MOVES TOWARD MXF

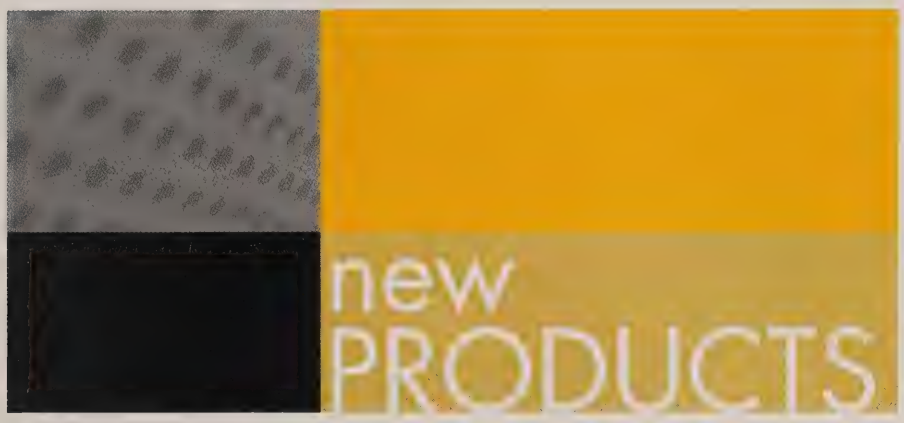
Along with making sure that today's systems comprehend both HD and SD, a big push in the broadcast industry is MXF (Material eXchange Format). MXF is being widely publicized by SMPTE, because it is meant to standardize that way that metadata and video/audio are wrapped to help disparate system be able to do more comprehensive file and metadata exchange. Pinnacle Systems is currently adopting MXF in several of its products including the Liquid editing systems, MediaStream play-to-air servers, Vortex News Servers, and Thunder production servers. The first of Pinnacle's products to do this will be the Liquid editing and MediaStream server products and they will be able to support this format natively. Other Pinnacle literature details this, but see figure 7 for some of the MXF interoperability.

CONCLUSION

The primary reasons for creating the above systems are to create an end-to-end system that allows minimal handling of tape, simplifies and standardizes regional commercial production, manages media movement geographically and locally, and integrates play out of regional spots with main centralised content to achieve a smooth centralised broadcast system. Additional, it was important to create and expandable system which comprehended future needs of HD and MXF.

The benefits of this architecture are equally applicable for broadcasters designing distributed playout servers, remote proxy browsing and editing, versatile news content exchange systems and a variety of applications requiring interoperability solutions. Working closely with Southern Cross Broadcasting, systems integrator Techtel Pty Ltd has achieved the lofty goals described at the beginning of the paper using advanced technology by Pinnacle Systems, Masstech, Encoda, and Spectra Logic.

** Matt Klein is Chief Solutions Architect, Palladium Storage Solutions, Pinnacle Systems. Thanks to Peter Chamberlain at Techtel for additional information and photographs.*



→ AVID'S XPRESS PRO AND MOJO

Avid Australia has hit the road with Avid Xpress Pro software and the Avid Mojo Digital Nonlinear Accelerator (Avid DNA).

As standalone software, Avid Xpress Pro offers award-winning Film Composer technology, which includes 24p film editing capabilities and support for the Panasonic AG-DVX100 24p camera, as well as support for various offline formats, including 15:1s, 35:1p, 28:1p, and 14:1p. The software also offers automatic expert color correction and advanced 2D and 3D OpenGL technology-based effects. When paired with the portable Avid Mojo accelerator, Avid Xpress Pro software benefits from hybrid architecture designed to leverage the power of both host-based CPU processing and hardware-based acceleration. Together, Avid Xpress Pro software and the Avid Mojo accelerator deliver professional video, film, and audio editing capabilities, including true real-time digital and analog output. Both products are qualified to run on a wide range of Windows-based CPUs as well as on the Power Mac G5.

Reach Avid Australia on +61-(0)2-8977 4800 or 1800 655 945, or visit www.avidaustralia.com.au

→ TX FROM ABE

→ THE NEW TOPOLOGY

SCOPUS' INTELLIGENT VIDEO GATEWAY SERIES.

Israeli company Scopus Network Technologies has released the Intelligent Video Gateway (IVG) Series, comprising the IVG-7100 Intelligent Headend Video Gateway, the IVG-7200 Intelligent Edge Video Gateway, the IVG-7300 Intelligent Video Remultiplexer and the IVG-7400 Intelligent Broadband IP Streamer.

Features include:

* Multiple inputs and outputs - ASI, Gigabit Ethernet (GBE) - providing full video routing and grooming to the PID level;
* Networking support for the routing of video and data over IP/ATM infrastructure;
* Seamless clustering of multiple IVG-7100 devices using a standard GBE switch, with single entity management;
* Digital to digital processing including Bit Rate Transcoding (SD & HD), joint Transrating (JT), statistical remultiplexing for bandwidth optimisation of multiple video services, VBR/CBR rate shaping, and seamless splicing for digital program/ad insertion;
* Full headend integration, including CA integration as well as PSI/SI and PSIP generation, processing and insertion;
* Built-in DVB-Scrambling and Simulcrypt 3 support
* Support for on demand applications - VOD, NVOD, time shifted TV
* Distributed architecture using Scopus BoB (Broadcast over Broadband) technology for video routing, networking and packet de-jittering;
* IVN end to end network management, down to service and PID level, fully based on SNMP protocol
* Advanced redundancy solutions eliminating the need of external matrix, using the IVN headend architecture;
* 12-16 ASI inputs; 2-6 ASI outputs, Gigabit Ethernet port (input/output)
* Aggregate input rate 2.5 Gbps and output rate 2 Gbps
* Broadband IP streaming for telco contribution, distribution and DTH applications

The Scopus office in Singapore can be reached on +65 6778 2501. Scopus' agent in Australia is Comsyst. Reach them on +61-2- 9488 4888.

Off-Air

>> >> AFTRS DIGITAL MEDIA LAUNCH

>> >> QUANTEL IBC PARTY

>> >> QUANTEL IBC PARTY

>> >> IBC HEAVYWEIGHT CHAMPIONS

>> >> QUANTEL IBC PARTY

>> >> BSA @ IBC

>> >> DIGITAL HOLLYWOOD @ AGNSW

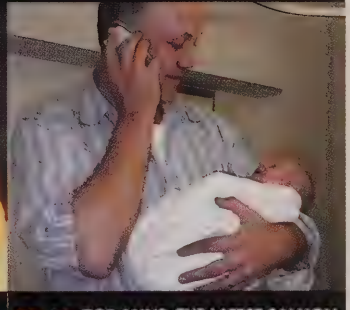
>> >> SMPTE AUSTRALIA AT IBC

>> >> BSA HARDWARE PROBLEMS

>> >> QUANTEL IBC PARTY

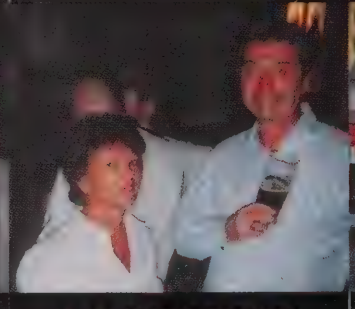
>> >> JIM'S DUTCH COUSINS

>> >> QUANTEL IBC PARTY



>> >> ZOE ANNE, THE LATEST SALMON (31-10-03)

>> >> QUANTEL IBC PARTY



>> >> JAN & MIKE FROM IBC

>> >> IN MELTZER'S WAKE

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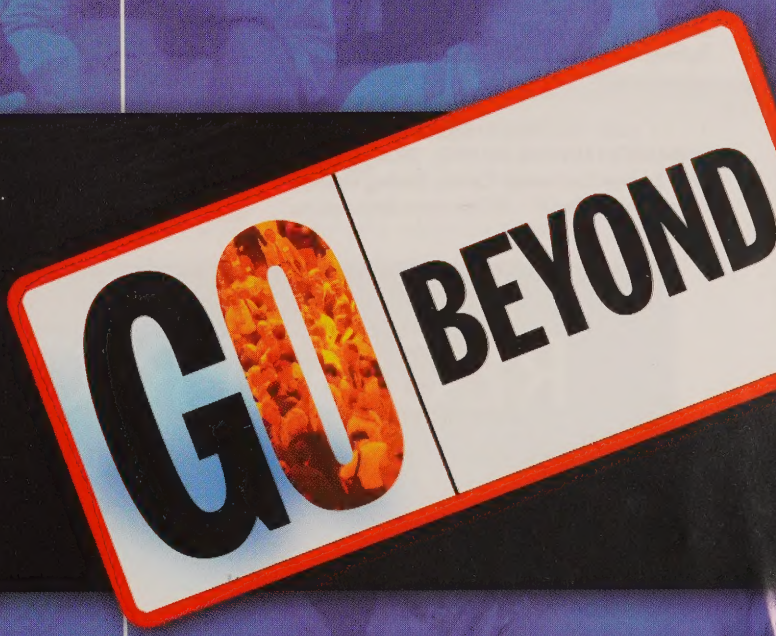

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EVENTS

>> >> Experience Avid IDNA Tour SYDNEY 13-14 November, Crows Nest Centre, Crows Nest www.avidaustralia.com.au

>> >> DISCREET EVOLVE TOUR Fri 14th November - Auckland, Rialto Cinema 3, Newmarket, Mon 17th November - Brisbane, QLD College of Art, Griffith Uni, 18th November - Sydney, Powerhouse Museum, Ultimo. RSVP: +61-(0)2-9969 6499

>> >> Screen Producers Association of Australia (SPAA) Conference, Australian Centre for the Moving Image, Melbourne, November 18-21. www.spaa.org.au

>> >> INTER BEE 2003, Nippon Convention Centre, Makuhari Messe Japan, November 19 - 21 www.bee.jesa.or.jp

>> >> NETWORK INSIGHT SEMINAR: BROADBAND, 25 November 2003, Sydney Harbour Marriott Hotel, Tel: (02) 9230 4262.

>> >> FINANCIAL REVIEW ADVERTISING SUMMIT Dockside, Cockle Bay Wharf, Sydney, Australia 02 Dec www.ibcoz.com.au/advertising03

>> >> aeaf - AUSTRALIAN EFFECTS & ANIMATION FESTIVAL DV FEST - DIGITAL VIDEO FEST Sydney Convention Centre, Darling Harbour, Sydney, Australia 07 - 10 Dec www.dmw.com.au

ADVERTISER INDEX

TV LOUDNESS - CONTINUED FROM PAGE 31

be even greater. The reliance on heavy compression, peak alignment and the development of advanced signal processing devices has exaggerated this problem.

The realisation of a loudness meter based on the LeqA algorithm coupled with Dialogue Intelligence allows broadcasters to adopt a different approach. By measuring the subjective loudness of programming in a manner consistent with the home listener and using this measurement to adjust program levels, loudness variations can be removed without compromising program dynamics.

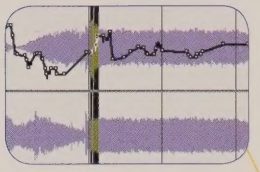
Dolby is working with standards bodies, including the ITU and EBU, who are currently examining loudness issues in broadcast. If a single broadcaster were to use this meter to ensure all of the material they broadcast is the same perceived loudness level the experience would improve for the listener at home. With the help of worldwide standards it should be possible to address loudness issues between broadcasters too.

References

(1) Allen, I., 1997. Are Movies Too Loud? Presented at SMPTE Film Conference, March 22, 1997.

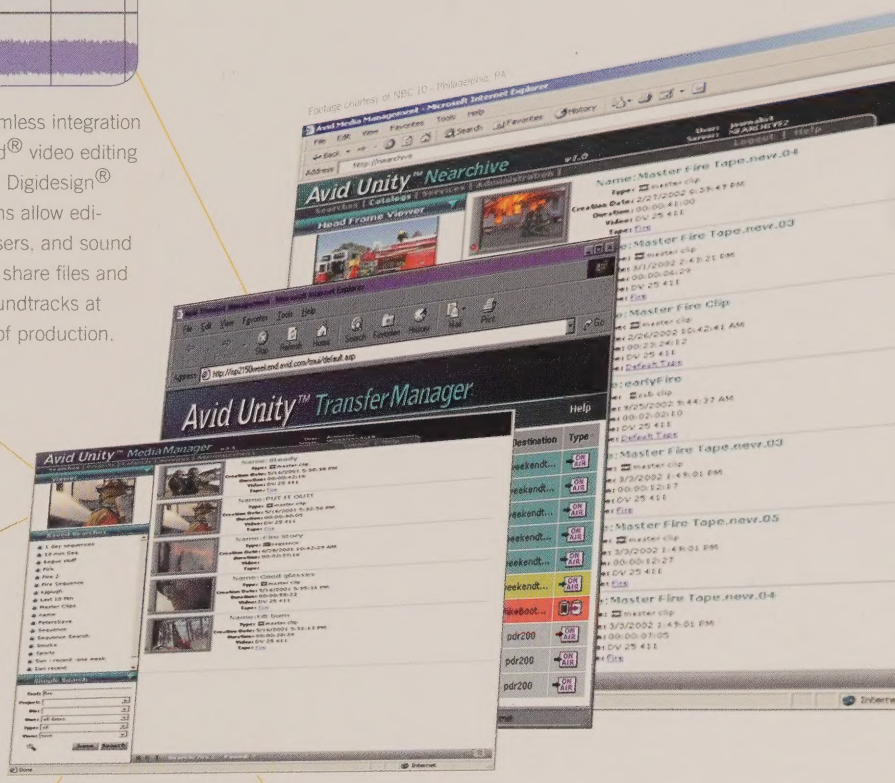
(2) United States Advanced Television Systems Committee. Standards Document A/54 pp. 49-52.

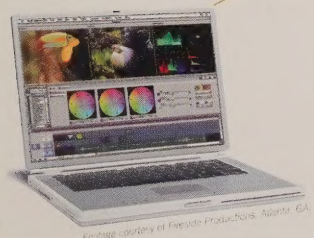
Nobody does workflow like Avid. Nobody.



Audio: Seamless integration between Avid® video editing systems and Digidesign® audio systems allow editors, composers, and sound designers to share files and fine tune soundtracks at every stage of production.

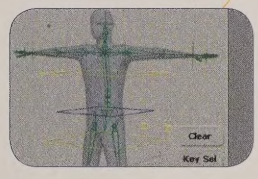
Editing: With simultaneous access to the same project bins, media, and metadata, multiple Avid editing systems can work in parallel, accessing video, audio, and effects tracks as they are created and posted to the network.





Mobility: Take the show on the road. You can create on the fly, then share projects, bins, and sequences between a remote laptop and Avid editing systems in the suite.

Avid Unity™ Networks: Without a network your system is a digital island. Connected to a network tuned for content creation pros, you can manage your media by individual user, assign and expand storage capacity by project, and establish security levels – all with a few mouse clicks.



Effects + Animation: Build complex 3D animations and create composite "previsualisations" for use in offline editing. The finished 3D components and metadata can then be accessed instantly for online finishing without rebuilding.

Finishing: Never recreate another effect! Advanced Conform capabilities let editors focus on correcting and perfecting the work, not on redoing what's already been done. And the speed and bandwidth of an Avid Unity network provide immediate access to even the largest files.

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to find out how an Avid workflow can work for you.

Come to the Experience Avid|DNA Tour, November 13 (Thurs) and 14 (Fri) at the Crows Nest Centre - 2 Ernest Place, Crows Nest NSW, 9am to 6pm. More info at www.avidaustralia.com.au/dnatour.

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